THE

# AMERICAN GAS-LIGHT JOURNAL.

THE OFFICIAL GAZETTE OF

## LIGHT, HEAT, WATER-SUPPLY, AND SEWERAGE.

**Rooms—No. 39 Nassau Street, cor. Liberty Street, opposite the Post-Office, New York.**

VOL. IV.—No. 83. NEW-YORK, MONDAY, JUNE 1, 1863. $3 PER ANNUM.

### PETROLEUM GAS.

The following report is from Mr. George Bower, of Huntingdonshire, gas contractor to the Duke of Marlborough, the Earl of Shrewsbury, Viscount Hill, &c.:

Having had a large quantity of crude petroleum oil placed at my disposal by Mr. A. S. Macrae, of Liverpool, for the purpose of ascertaining its gas-yielding properties, and also to ascertain whether it could be used along with common coal, wood, or peat, for the purpose of enriching the gases made from these substances, so as to compete with boghead, which is the material now generally used, I am now enabled to make the following observations:

Before giving the results of the experiments, I think it right to describe the apparatus which I have constructed purposely for these experiments.

The retort is double acting, four feet long, and of this shape in section S, and known as the Fitzmaurice retort, the principle being that of the regenerative system, as practised by Malam some forty years ago, but with this difference in construction—Malam had two retorts, a large and a small one, set one over the other, the coal being placed in the large retort at the bottom, the vapors passed through the smaller one at the top, and those which were not permanently gaseous were made so by their passage through this highly heated surface.

Although by this process the yield of gas was increased per ton of coals distilled, yet it was at the cost of both the illuminating power, wear and tear, and fuel—in short, the cost was greater than the value of the larger product, and so did not obtain extensive use. This system was applied to coal-gas, which of itself only gives a moderately illuminating gas; and though some of the tarry vapors were arrested, yet the second application of heat to the already formed gas deteriorated its illuminating properties, by causing it to deposit carbon, and thus more than counterbalanced the advantage of an increased yield. The evolution of gas from coal in an ordinary retort is a slow and gradual operation, the outside being first acted upon; and hence it requires six hours to obtain the whole of the gas from 1½ cwt. of coal, with which the generality of retorts are charged; but with oil the vapor is evolved so rapidly, as without a considerable surface for it to pass over, a very great proportion of it would be condensed into a thin black tarry oil; hence the advantage of the Fitzmaurice retort, which is also equally adapted for coal, wood, or peat, and the gases from which can be enriched with oil.

It has been a common practice in making gas from oil to fill retorts with coke, broken bricks, or any material which will give surface, and the oil has been dropped or run into them, or made to traverse through them; but this appears to be a very effective way of absorbing the carbon, to which all gas owes its luminiferous property. The result of a great number of experiments has made me determine that a high heat with a large surface is the very worst plan which can be adopted for making gas from oil; but that in order to get the best results, a moderate heat—dull cherry red by daylight—and the double form of retort without anything in it, give the best results; not for volume of gas, but for quantity of light; in other words, there is more light from 80 cubic feet of gas produced in accordance with the latter plan from the gallon of oil, than from 160 feet produced according to the former made from the same quantity.

The test of the apparatus is the same as for ordinary coal, excepting that no purifier is required; but the condenser has double the surface of that for coal, on account of the rapidity with which the gas is evolved. A meter to measure the quantity of gas produced, and a gas-holder, complete the apparatus.

Two qualities of oil were supplied to me by Mr. Macrae—one of specific gravity 805, the other 910; water being 1.

It may be stated that the lighter the oil the better the yield of gas, and the heavier it is the greater the heat required to get the best results.

I now proceed to consider the cost of gas from petroleum oil, and how far it may be used for this purpose.

The present price of the lighter of the two oils is about 1s. per gallon. I will dismiss the heavy oil, and confine my remarks to that of sp. gr. .805, as it is, upon the whole, more economical to use than the other.

With the present prices of oil the gas cannot be other than very costly, when compared by volume alone against ordinary coal-gas; but when all the collateral advantages are taken into consideration, and a comparison instituted upon the basis of quantity of light from equal volumes, then the contrast is not so marked.

The advantages which oil-gas has over coal are in the fact, that it requires no purification, being absolutely free from impurities; hence, it may be used in the most sumptuously decorated saloon, library, or picture-gallery without the slightest fear of its injuring anything whatever; the process of making the gas is much more simple, the apparatus to produce an equal quantity of light as that from coal is much less costly, and consequently the wear and tear is also less; and not only is a less quantity required for an equal amount of light, but the heat is considerably less than from coal-gas.

If the comparison be made as between coal and oil, coal undoubtedly makes the cheaper light by far; but, if it be instituted as between tallow and oil, as ordinarily burnt in lamps, then the light from petroleum oil-gas is very much less than from either of them.

One ton of oil will produce as much gas as will give the light of that produced from good Newcastle coal; thus, where carriage forms the chief item of the cost of the material at its destination, oil may, in such a case, enter into favorable competition with coal; or, where the first consideration is purity, and to have a gas which, light for light, shall be more brilliant and powerful than the oil burnt in the solar and moderateur lamps, then not only is petroleum superior, but is also of considerably less cost.

His Royal Highness the late Prince Consort took great interest in portable gas, and I have in my possession a vase which he had made specially for his own use to contain compressed oil-gas. One foot of oil-gas will give the light of three feet of ordinary coal-gas, and, though gas, under very high pressure, loses some of its luminous qualities, yet it may be condensed at fifteen atmospheres, and thus become perfectly portable; so that, beginning with a gas of three or four times the illuminating power of common coal-gas, and condensing a given volume into a fifteenth of its bulk, there is in this fact alone a large field for the use of oil-gas for the lighting of railway trains, ships, private carriages, and country houses, where it may not be feasible or policy to erect small gas-works for the supply of gas at ordinary pressures. For instance, the Albert vase already alluded to is of a capacity equal to half a cubic foot, and, if charged with oil-gas compressed to fifteen atmospheres, it will then deliver seven feet, and as this is, to begin with, three times more powerful than common gas, its effect will be equal to twenty-one feet, and will give a light equal to six or eight candles for seven hours.

The daily cost of petroleum oil-gas, when made to supply one hundred lights burning for six hours, with each light being equal to eight candles, is as follows:

| | | | |
|---|---|---|---|
| 15 gallons of oil, 1s. | 0 | 15 | 0 |
| Coke to heat the retorts, 3 cwt., 1s. | 0 | 3 | 0 |
| Labor—part of a lad or man's time | 0 | 1 | 6 |
| Wear and tear | 0 | 0 | 9 |
| Interest on capital | 0 | 0 | 4 |
| Fund to maintain plant in perpetuity | 0 | 0 | 6 |
| Net cost of 1,200 cubic feet | £1 | 1 | 1 |

This is about five times what coal-gas would cost made on the same scale; but as the illuminating qualities of the 1,200 cubic feet are equal to about 3,500 of ordinary coal-gas, the oil does not compare very unfavorably when everything is taken into consideration, so that if the gas be required only for lighting purposes, and not for cooking or heating (for which it is totally inapplicable), then there are very many who will doubtless prefer paying a high price for oil-gas, in order to get a light which is absolutely pure, and which, though not nearly so cheap as ordinary coal-gas, is nevertheless infinitely cheaper than oil, tallow, or wax, as ordinarily burnt, and without their inconveniences.

The supply of oil in Pennsylvania and Canada, in Moldavia and Wallachia, is practically exhaustless; and as the means of transport to the shipping port are increased, so will probably the price be reduced, though every day almost is adding a new product obtainable from it, so that it may be some time before the price will be materially reduced.—*Oil Trade Review.*

---

GAS EXPLOSION IN ENGLAND.—We learn from an English paper that, on the night of April 2d, a terrific explosion of gas occurred at Monkwearmouth, Sunderland, England, which caused the death of three children. The explosion occurred in a large steam flour-mill, near the railroad station. At eight o'clock the engineer was locking up all for the night, and was proceeding into the office, which was on the ground floor at the north-east corner of the building, but partitioned off from it, though opening into the flat. He was carrying a candle, when gas, which had accumulated from a leakage, or from some of the cocks having been left unturned, took fire and exploded with a deafening report. The explosion was followed by a loud crashing noise, and people at a distance saw a sheet of flame shoot up high into the heavens, and a volume of smoke seemed to follow. The front of the mill was completely blown down; part of the roof is gone, and sacks of flour and grain, and stones and rubbish, were scattered across the street. The engineer escaped with his life in a most miraculous manner, though he was much hurt. At the time of the explosion seven little boys were playing in front of the mill. Four of them escaped; but the other three were overwhelmed by the falling mill and killed. The mill is a complete wreck, and the damage is estimated at from $10,000 to $15,000.

---

SEWERAGE ACCIDENT IN ENGLAND.—An accident recently occurred in a sewer at Deptford, England, whereby three men lost their lives. Want of "shoring" was attributed by one witness, before the coroner's jury, as the cause of the accident. The verdict of the jury was, "accidental death."

# GAS-LIGHT COMPANIES IN THE UNITED STATES.

*Compiled from official sources expressly for the* AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

| No. | Chartered. | Town. | State. | Chartered Capital. | Par Val. Per Sh. $ | Semi-Ann'l Div'd. | Dividends Payable. | Population of Gas District. | Price per 1000 Feet. | Asked pr. cent. | Offered pr. cent. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1857 | ADRIAN | Mich. | 50,000 | 50 | — | May & November. | 4,000 | 3 50 | .... | .... | |
| 2 | 1856 | AKRON | O. | 20,000 | 33⅓ | — | Do. | 3,500 | 3 00 | .... | .... | |
| 3 | 1845 | ALBANY | N. Y. | 25 ,000 | 20 | 4 | January & July. | 65,000 | 3 00 | 120 | .... | None in market. |
| 4 | 1858 | ALBION | N. Y. | 30,000 | 100 | — | Do. | 3,000 | 3 80 | .... | .... | |
| 5 | 1851 | ALEXANDRIA | Va. | 105,?20 | — | — | City Works. | 9,000 | 3 50 | .... | .... | |
| 6 | 1852 | ALLEGHANY | Pa. | 200,000 | 25 | 4 | May & November. | 25,000 | 3 00 | .... | .... | |
| 7 | 1853 | ALLENTOWN | Pa. | 60,000 | 100 | 3½ | Do. | 5,000 | 3 50 | .... | .... | |
| 8 | 1857 | ALTON | Ill. | 75,000 | — | — | Private Works. | 4,000 | 3 50 | .... | .... | |
| 9 | 1859 | ALTOONA | Pa. | 40,000 | 20 | 4 | January & July. | 5,000 | 3 00 | .... | .... | |
| 10 | 1859 | AMESBURY AND SALISBURY | Mass. | 30,000 | 25 | — | Do. | 7,000 | 4 00 | .... | .... | |
| 11 | 1858 | ANNAPOLIS | Md. | 100,000 | 25 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 12 | 1858 | ANN ARBOR | Mich. | 23,000 | 50 | 5 | March & September. | 5,500 | 4 00 | .... | .... | |
| 13 | 1858 | ASTORIA | N. Y. | 20,000 | 50 | — | Do. | 6,000 | 4 00 | .... | .... | |
| 14 | 1855 | ATLANTA | Ga. | 50,000 | 25 | 5 | January & July. | 12,000 | 5 00 | .... | .... | |
| 15 | 1857 | ATTLEBORO' | Mass. | 6,000 | 50 | 3 | Do. | 2,000 | 6 00 | .... | .... | |
| 16 | 1850 | AUBURN | N. Y. | 80,000 | 50 | 5 | Do. | 10,000 | 7 00 | .... | .... | |
| 17 | 1851 | AUGUSTA | Ga. | 80,000 | 25 | 8 | Do. | 9,000 | 6 00 | .... | .... | |
| 18 | 1853 | AUGUSTA AND HALLOWELL | Me. | 84,700 | 50 | 5 | Do. | 10,000 | 4 00 | .... | .... | |
| 19 | 1860 | AURORA | Ind. | 10,000 | — | — | Private Works. | 3,500 | 3 50 | .... | .... | |
| 20 | 1817 | BALTIMORE | Md. | 550,000 | 100 | 5 | June & December. | 150,000 | 2 50 | 150 | .... | None for sale. |
| 1 | 1852 | BANGOR | Me. | 120,000 | 100 | 4 | January & July. | 12,000 | 3 50 | .... | .... | |
| 2 | 1855 | BATAVIA | N. Y. | 32,000 | 20 | 4 | Do. | 2,500 | 4 00 | .... | .... | |
| 3 | 1853 | BATH | Me. | 65 000 | 100 | 3 | April & October. | 10,000 | 3 75 | .... | .... | |
| 4 | 1859 | BATH | N. Y. | 15,000 | 50 | — | May & November. | 3,000 | 7 00 | .... | .... | |
| 5 | 1861 | BATTLE CREEK | Mich. | 15,000 | — | — | January & July. | | | .... | .... | |
| 6 | 1858 | BELFAST | Me. | 14,000 | 100 | — | Do. | 7,000 | 7 00 | .... | .... | |
| 7 | 1856 | BELLEFONT | Pa. | 20,000 | 25 | 2 | Do. | 3,500 | 4 00 | .... | .... | |
| 8 | | BELOIT | Wis. | 30,000 | — | — | Do. | 4,000 | 4 00 | .... | .... | |
| 9 | 1854 | BETHLEHEM | Pa. | 50,000 | 50 | 4 | June & December. | 2,000 | 3 20 | ... | .... | |
| 30 | 1859 | BEVERLY | Mass. | 40,000 | 100 | — | January & July. | 4,000 | 4 00 | .... | .... | |
| 1 | 1853 | BINGHAMPTON | N. Y. | 50,000 | 50 | 3½ | Do. | 10 000 | 4 00 | .... | .... | |
| 2 | 1849 | BIRMINGHAM | Pa. | 40,000 | 50 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 3 | 1855 | BLOOMINGTON | Ill. | 40,000 | 50 | — | Do. | 6,000 | 4 00 | .... | .... | |
| 4 | 1853 | BORDENTOWN | N. J. | 50,000 | 25 | 3 | June & December. | 4,000 | 3 80 | .... | .... | |
| 5 | 1822 | BOSTON | Mass. | 1,000,000 | 500 | 5 | Do. | 130,000 | 2 25 | .... | .... | |
| 6 | 1850 | BRATTLEBORO' | Vt. | 21,000 | — | — | Do. | 3,000 | 4 00 | .... | .... | |
| 7 | 1851 | BRIDGEPORT | Ct. | 90,000 | 25 | 4 | January & July. | 10,000 | 4 00 | 90 | .... | Passed last dividend. |
| 8 | 1857 | BRIDGETON | N. J. | 50,000 | 20 | — | Do. | 5,000 | 4 00 | .... | .... | |
| 9 | 1856 | BRISTOL | Pa. | 30,000 | 25 | 3 | February & August. | 3,000 | 4 00 | .... | .... | |
| 40 | 1855 | BRISTOL | R. I. | 35,000 | 50 | 2 | January & July. | 6,000 | 4 00 | .... | .... | |
| 1 | 1850 | BROCKPORT | N. Y. | 25,000 | 100 | 3 | Do. | 1,500 | 4 00 | .... | .... | |
| 2 | 1858 | BROOKLINE | Mass. | 66,000 | 100 | 4 | February & August. | 3,500 | 4 00 | .... | .... | |
| 3 | 1825 | BROOKLYN | N. Y. | 2,000,000 | 25 | 5 | January & July. | 75,000 | 2 50 | 170 | 160 | |
| 4 | | BROWNSVILLE | Pa. | | | | Do. | | | .... | .... | |
| 5 | 1848 | BUFFALO | N. Y. | 600,000 | 50 | 5 | Do. | 70,000 | 3 00 | 140 | 125 | |
| 6 | 1852 | BURLINGTON | N. J. | 100,000 | 25 | 3 | Do. | 5,000 | 4 00 | .... | .... | |
| 7 | 1853 | BURLINGTON | Vt. | 75,000 | 25 | 2½ | Do. | 10,000 | 4 50 | .... | .... | |
| 8 | 1859 | BURLINGTON | Iowa. | 65,000 | 50 | — | Do. | 8,000 | 4 00 | .... | .... | |
| 9 | 1861 | CALAIS | Me. | 90,000 | 100 | — | Do. | 10,000 | 3 50 | .... | .... | |
| 50 | 1852 | CAMBRIDGE | Mass. | 300,000 | 100 | 5 | February & August. | 20,000 | 3 50 | 100 | 97½ | |
| 1 | 1852 | CAMDEN | N. J. | 300,000 | 100 | 3 | April & October. | 10,000 | 3 50 | .... | .... | |
| 2 | 1853 | CANANDAIGUA | N. Y. | 50,000 | 50 | — | January & July. | 3,000 | 4 00 | 90 | 80 | |
| 3 | 1856 | CANTON | O. | 19,0 0 | 50 | 6 | March & September. | 6,000 | 3 00 | .... | .... | |
| 4 | 1853 | CAPE ISLAND | N. J. | 80,000 | 100 | 3 | October. | 10,000 | 6 00 | .... | .... | |
| 5 | 1860 | CARBONDALE | Pa. | 16,000 | 25 | — | March & September. | 5,000 | 4 00 | .... | .... | |
| 6 | 1855 | CARLISLE | Pa. | 30,000 | 25 | — | January & July. | 4,000 | 4 00 | .... | .... | |
| 7 | 1856 | CATASAUQUA | Pa. | 15,000 | 25 | 5 | May & November. | 2,000 | 4 00 | .... | .... | |
| 8 | 1858 | CATSKILL | N. Y. | 10,000 | — | — | Private Works. | 3,000 | 4 00 | .... | .... | |
| 9 | 1857 | CHAMBERSBURG | Pa. | 30,000 | 25 | — | January & July. | 3,000 | 4 00 | .... | .... | |
| 60 | 1846 | CHARLESTON | S. C. | 723,800 | 25 | 4 | Do. | 50,000 | 4 00 | .... | .... | |
| 1 | 1851 | CHARLESTOWN | Mass. | 200,000 | 50 | 4 | Do. | 30,000 | 3 00 | 105 | .... | |
| 2 | 1858 | CHARLOTTE | N. C. | 14,000 | 50 | 10 | March & September. | 3,500 | 6 00 | .... | .... | |
| 3 | 1850 | CHARLOTTEVILLE | Vt. | 15,000 | 25 | — | Do. | 4,000 | 4 50 | .... | ... | |
| 4 | 1851 | CHELSEA | Mass. | 100,000 | 100 | 3½ | January & July. | 8,000 | 3 50 | .... | .... | |
| 5 | 1856 | CHESTER | Pa. | 35,000 | 25 | 3 | April & October. | 4,000 | 4 00 | .... | .... | |
| 6 | 1849 | CHICAGO | Ill. | 1,200,000 | 25 | 5 | January & July. | 100,000 | 2 50 | 150 | 140 | Very scarce. Stock wanted. |
| 7 | 1857 | CHICOPEE | Mass. | 50,000 | 20 | — | Do. | | 4 00 | .... | .... | |
| 8 | 1851 | CHILLICOTHE | O. | 40,000 | 25 | 4 | Do. | 12,000 | 3 50 | .... | .... | |
| 9 | 1841 | CINCINNATI | O. | 1,600,000 | 100 | 5 | Do. | 225,000 | 2 50 | .... | .... | |
| 70 | 1859 | CITIZENS', BROOKLYN | N. Y. | 1,000,000 | 20 | — | Do. | 135,000 | 2 00 | 128 | 125 | |
| 1 | | CLARKESVILLE | Tenn. | 100,000 | 50 | — | Do. | 5,000 | 4 00 | .... | .... | |
| 2 | 1860 | CLAREMONT | N. H. | 20 000 | 100 | — | March & September. | 3,000 | 4 00 | .... | .... | |
| 3 | 1846 | CLEVELAND | O. | 200,000 | 10 | 5 | January & July. | 20,000 | 3 00 | .... | .... | |
| 4 | 1858 | CLINTON | Mass. | 30,000 | 500 | 5 | Do. | 3,000 | 4 00 | .... | .... | |
| 5 | 1859 | CLYDE | N. Y. | 10,000 | 50 | 4 | Do. | 2,500 | 4 00 | .... | .... | |
| 6 | 1854 | COHOES | N. Y. | 50,000 | 20 | 3½ | April & October. | 5,000 | 3 60 | .... | .... | |
| 7 | 1860 | COLD SPRING | N. Y. | 30,000 | 50 | — | Do. | 3,500 | 4 00 | 80 | .... | Formerly Rosin-Gas, but now Coal. A well managed company. Stock firmly held. |
| 8 | 1860 | COLD WATER | Mich. | 25,000 | 50 | 5 | January & July. | 4,000 | 4 00 | .... | .... | |
| 9 | 1852 | COLUMBIA | Pa. | 37,500 | 25 | — | Do. | 4,000 | 3 50 | .... | .... | |
| 80 | 1852 | COLUMBIA | S. C. | 44,000 | 25 | 4 | Do. | 6,000 | 6 00 | .... | .... | |
| 1 | 1857 | COLUMBIA | Cal. | 50,000 | 25 | — | Do. | 4,500 | 10 00 | .... | .... | |
| 2 | 1853 | COLUMBUS | Ga. | 54,000 | 25 | 5 | Do. | 5,000 | 7 00 | .... | .... | |
| 3 | 1850 | COLUMBUS | O. | 100,000 | 10 | 6 | Do. | 30,000 | 3 00 | .... | .... | |
| 4 | 1853 | CONCORD | N. H. | 50 000 | 50 | 5 | Do. | 8,000 | 3 50 | .... | .... | |
| 5 | 1853 | COVINGTON AND NEWPORT | Ky. | 100,000 | 50 | 3½ | Do. | 28,000 | 4 00 | .. | .... | |
| 6 | 1854 | CUMBERLAND | Md. | 60,000 | 50 | 3 | Do. | 6,000 | 4 00 | .... | .... | |
| 7 | 1857 | DANBURY | Ct. | 50,000 | 25 | 4 | Do. | 2,000 | 3 75 | .... | ... | |
| 8 | 1856 | DANVILLE | Pa. | 30,000 | 25 | — | June & December. | 3,000 | 4 00 | .... | .... | |
| 9 | 1855 | DAVENPORT | Iowa. | 56,000 | 100 | — | Do. | 6,000 | 5 00 | .... | .... | |
| 90 | 1848 | DAYTON | O. | 50,000 | 25 | 5 | February & August. | 8,000 | 3 50 | .... | .. . | |
| 1 | 1853 | DEDHAM | Mass. | 40.000 | 50 | — | January & July. | 3,000 | 4 00 | .... | .... | |
| 2 | 1860 | DELAWARE | O. | 30,000 | 25 | — | Do. | 2,500 | 3 00 | .... | .... | |
| 3 | 1849 | DETROIT | Mich. | 500,000 | 50 | 5 | Do. | 30,000 | 3 50 | 160 | 150 | Excellent Stock. No sales. |
| 4 | 1860 | DOBBS' FERRY | N. Y. | 25,000 | — | — | Do. | 3,000 | 4 00 | .... | .... | |
| 5 | 1854 | DORCHESTER | Mass. | 150,000 | 100 | — | Do. | 14,000 | 4 00 | .... | .... | |
| 6 | 1859 | DOVER | Del. | 12,000 | — | — | Private Works. | 2,000 | 4 00 | .... | .... | |
| 7 | | DOVER | N. H. | | | | January & July. | | | .... | .... | |
| 8 | 1857 | DOYLESTOWN | Pa. | 50,000 | — | — | Do. | 3,000 | 4 00 | .... | .... | |
| 9 | 1854 | DUBUQUE | Iowa. | 100,000 | 50 | — | Do. | 17,000 | 4 50 | .... | .... | |
| 100 | 1853 | EAST BOSTON | Mass. | 133,000 | 25 | 4 | Do. | 20,000 | 3 50 | .... | 145 | No transactions. |
| 1 | 1858 | EAST GREENWICH | R. I. | 11,200 | 100 | 15 | Do. | 3,000 | 7 00 | .... | .... | |
| 2 | 1861 | EAST HAMPTON | Mass. | 10,000 | 25 | — | Do. | 5,000 | 9 00 | .... | .... | |
| 3 | 1861 | EAST NEW YORK | N. Y. | 50,000 | 50 | — | Do. | 12,000 | 3 50 | .... | .... | |
| 4 | 1857 | EASTON | Md. | 9,000 | 10 | — | Do. | 1,500 | 7 00 | .... | .... | |
| 5 | 1850 | EASTON | Pa. | 125,000 | 50 | 4 | June & December. | 6,000 | 3 60 | .... | .... | |
| 6 | 1856 | EASTPORT | Me. | 50,000 | 55 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 7 | 1855 | ELIZABETH | N. J. | 100,000 | 20 | 4 | January & July. | 14,000 | 3 50 | .... | .... | |
| 8 | | ELLICOTT'S MILLS | Md. | 10,000 | — | — | Do. | 4,000 | 4 00 | .... | .... | |
| 9 | 1852 | ELMIRA | N. Y. | 50,000 | 25 | 3½ | Do. | 5,000 | 4 00 | .... | ... | |
| 110 | 1852 | ERIE | Pa. | 68,000 | 50 | 2½ | June & December. | 10.000 | 3 00 | .... | .... | |
| 11 | 1833 | EVANSVILLE | Ind. | 60,000 | 50 | 4 | January & July. | 12,000 | 4 00 | 110 | .... | A very good Company. |
| 12 | | EXETER | N. H. | 60,000 | — | — | Do. | 12,000 | .. .. | | ... | |
| 13 | | FAIR HAVEN | Ct. | 20,000 | 25 | | Do. | 8,000 | 4 00 | .... | .... | |
| 14 | 1847 | FALL RIVER | Mass. | 26,000 | — | — | Private Works. | 12,000 | 3 50 | .... | .... | |
| 15 | 1859 | FAYETTEVILLE | N. C. | 25,000 | 100 | 6 | January & July. | 7,000 | 6 00 | .... | .... | |
| 16 | | FIFTH WARD (Milwaukee) | Wis. | 50,000 | 25 | — | Do. | 10,000 | 4 00 | .... | .... | |
| 17 | 1857 | FISHKILL | N. Y. | 10,000 | 20 | — | April & October. | 1,500 | 9 00 | .... | .... | |
| 18 | 1853 | FITCHBURG | Mass. | 100,000 | 50 | 3 | January & July. | 5,000 | 4 00 | .... | .... | Make Petroleum-Gas. |
| 19 | 1859 | FLEMINGTON | N. J. | 20,000 | — | — | Do. | 3,000 | 4 00 | .... | .... | |
| 120 | 1855 | FLUSHING | N. Y. | 40,000 | 50 | 1½ | March & September. | 6,500 | 4 00 | .... | .... | |
| 21 | 1858 | FORT WAYNE | Ind. | 50,000 | 25 | — | Do. | 6.000 | 4 00 | .... | .... | |
| 22 | 1851 | FRANKFORT | Ky. | 30,000 | — | — | City Works. | 5.500 | 4 50 | .... | .... | |
| 23 | 1851 | FREDERICK CITY | Md. | 36,000 | 100 | — | January & July. | 5,000 | 6 70 | .... | .... | |
| 24 | 1854 | FREDERICKSBURG | Va. | 72,500 | 50 | 5 | Do. | 4,500 | 4 00 | .... | .... | |
| 25 | 1858 | FREDONIA (Natural Gas) | N. Y. | 10,000 | 100 | — | Do. | 2,000 | 4 00 | .... | .... | Unlimited supply of Natural Gas. |
| 26 | 1856 | FREEPORT | Ill. | 20,000 | 100 | — | May & November. | 10,000 | 4 00 | .... | .... | |

## GAS-LIGHT COMPANIES IN THE UNITED STATES.—Continued.

*Compiled from official sources expressly for the* AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

| No. | Chartered | Town. | State. | Chartered Capital. | Par Val. Per Sh. $ | Semi-Ann'l Div'd. | Dividends Payable. | Population of Gas District. | Price per 1000 Feet. | Asked pr. cent. | Offered pr. cent. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 127 | 1859 | FREMONT | O. | 25,000 | 25 | — | May & November. | 2,000 | 4 50 | .... | .... | |
| 28 | 1858 | FULTON | N. Y. | 12,000 | 100 | — | Do. | 4,000 | 7 00 | .... | .... | |
| | | | | | | | | | | .... | .... | |
| 29 | 1855 | GALENA | Ill. | 70,000 | 100 | — | Do. | 8,000 | 4 00 | .... | .... | |
| 130 | 1859 | GALION | O. | 25,000 | 25 | — | January & July. | 1,800 | 3 00 | .... | .... | |
| 31 | 1858 | GALVESTON | Texas. | 150,000 | 50 | — | May & November. | 7,000 | 6 00 | .... | .... | |
| 32 | 1854 | GARDINER | Me. | 100,000 | 50 | 4 | Do. | 8,000 | 4 00 | .... | .... | |
| 33 | 1853 | GENEVA | N. Y. | 75,000 | 25 | 2½ | Do. | 6,000 | 4 00 | .... | .... | |
| 34 | 1851 | GERMANTOWN | Pa. | Merged | into | the | Philadelphia Works. | 12,000 | 2 25 | .... | .... | |
| 35 | 1859 | GETTYSBURG | Pa. | 20,000 | 50 | 3 | January & July. | 2,500 | 4 00 | .... | .... | |
| 36 | 1854 | GLENN'S FALLS | N. Y. | 35,000 | 50 | 3 | February & August. | 4,000 | 4 00 | .... | .... | |
| 37 | 1854 | GLOUCESTER | Mass. | 40,000 | 50 | — | January & July. | 5,000 | 3 50 | .... | .... | |
| 38 | 1857 | GLOVERSVILLE | N. Y. | 15,000 | 25 | — | Do. | 3,000 | 3 50 | .... | .... | |
| 39 | 1858 | GRAND RAPIDS | Mich. | 50,000 | 20 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 140 | 1855 | GREAT BARRINGTON | Mass. | 5,000 | 100 | 5 | April & October. | 2,000 | 7 00 | .... | .... | |
| 41 | 1849 | GREAT FALLS | N. H. | 50,000 | 100 | 3 | Do. | 3,000 | 4 00 | .... | .... | |
| 42 | 1860 | GREENFIELD | Mass. | 20,000 | 50 | 2 | January & July. | 2,500 | 4 00 | .... | .... | Close cor poration. |
| 43 | 1853 | GREENPOINT | N. Y. | 100,000 | 50 | 5 | Do. | 20,000 | 3 00 | .... | .... | |
| 44 | 1859 | GREENSBORO' | N. C. | 12,000 | 50 | — | April & October. | 3,000 | 7 00 | .... | .... | |
| 45 | 1858 | GREENSBURG | Pa. | 30,000 | 25 | 3 | May & November. | 2,000 | 3 00 | .... | .... | |
| 46 | 1854 | HAGERSTOWN | Md. | 15,000 | 20 | — | January & July. | 2,000 | 6 00 | .... | .... | |
| 47 | | HAMILTON | O. | 15,000 | | | Do. | | | .... | .... | |
| 48 | 1859 | HANNIBAL | Mo. | 100,000 | 100 | — | Do. | 6,000 | 3 50 | .... | .... | |
| 49 | 1857 | HARLEM | N. Y. | 350,000 | 50 | 3½ | Do. | 25,000 | 3 00 | .... | 145 | |
| 150 | 1855 | HARRISBURG | Pa. | 100,000 | — | 4 | Do. | 5,000 | 4 00 | .... | .... | |
| 51 | 1849 | HARTFORD | Ct. | 200,000 | 25 | 4 | Do. | 25,000 | 3 00 | 150 | 140 | Stock in demand. |
| 52 | | HASTINGS | N. Y. | | | | Do. | 8,000 | 4 00 | .... | .... | |
| 53 | 1853 | HAVERHILL | Mass. | 50,000 | 50 | — | Do. | 5,000 | 4 00 | .... | .... | |
| 54 | 1859 | HAVERSTRAW | N. Y. | 20,000 | 100 | — | Do. | 5,000 | 4 00 | .... | .... | |
| 55 | 1861 | HAVESVILLE | Mass. | 15,000 | 25 | | Do. | 4,000 | 4 00 | .... | .... | |
| 56 | 1859 | HEMPSTEAD | N. Y. | 16,000 | 25 | — | Do. | 1,000 | 4 00 | .... | .... | |
| 57 | 1862 | HOBOKEN | N. J. | 100,000 | 25 | 3 | Do. | 30,000 | 2 50 | .... | 100 | Works not yet built. |
| 58 | 1856 | HOLLIDAYSBURG | Pa. | 30,000 | 25 | 2 | Do. | 4,000 | 3 50 | .... | .... | |
| 59 | 1861 | HOLYOKE | Mass. | 20,000 | 25 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 160 | 1861 | HOMER & CORTLANDT | N. Y. | 40,000 | 100 | — | Do. | 6,000 | 4 00 | .... | .... | |
| 61 | 1854 | HONESDALE | Pa. | 30,000 | 25 | 3 | Do. | 2,500 | 4 00 | .... | .... | |
| 62 | 1860 | HORNELLSVILLE | N. Y. | 12,000 | 50 | — | Do. | 2,000 | 4 00 | .... | .... | |
| 63 | 1853 | HUDSON | N. Y. | 50,000 | 100 | 3½ | February & August. | 3,000 | 4 00 | .... | .... | |
| 64 | 1857 | HUNTINGTON | Pa. | 18,000 | 50 | 3 | Do. | 2,000 | 3 50 | .... | .... | |
| 65 | 1856 | HUNTSVILLE | Ala. | 7,325 | 25 | — | June & December. | 2,000 | 5 00 | .... | .... | |
| 66 | | INDIANAPOLIS | Ind. | 150,000 | — | — | Do. | 15,000 | 5 00 | .... | .... | |
| 67 | 1857 | IOWA CITY | Iowa. | 40,000 | 50 | — | February & August. | 4,000 | 4 50 | .... | .... | |
| 68 | 1852 | ITHACA | N. Y. | 75,000 | 25 | 3½ | January & July. | 6,000 | 4 00 | .... | .... | |
| 69 | 1857 | JACKSON | Mich. | 25,000 | 50 | 5 | Do. | 6,000 | 3 50 | .... | .... | |
| 170 | | JACKSON | Miss. | 80,000 | 50 | — | Do. | 4,000 | 4 50 | .... | .... | |
| 71 | | JACKSON | Cal. | 50,000 | 30 | — | Do. | 4,000 | 10 00 | .... | .... | |
| 72 | | JACKSONVILLE | Flor. | 30,000 | 20 | — | Do. | 2,000 | 7 00 | .... | .... | |
| 73 | | JACKSONVILLE | Ind. | 50,000 | 50 | — | Do. | 4,000 | 5 00 | .... | .... | |
| 74 | 1858 | JACKSONVILLE | Mo. | 25,000 | 25 | — | Do. | 7,000 | 6 00 | .... | .... | |
| 75 | 1856 | JAMAICA | N. Y. | 20,000 | — | 4 | Do. | 6,000 | 4 00 | .... | .... | |
| 76 | 1853 | JAMAICA PLAIN | Mass. | 10,000 | 100 | 4 | Do. | 3,000 | 4 00 | .... | .... | |
| 77 | | JAMESTOWN | N. Y. | 25,000 | — | — | Do. | 4,000 | 4 00 | .... | .... | |
| 78 | 1856 | JANESVILLE | Wis. | 50,000 | 100 | — | Do. | 12,000 | 4 00 | .... | .... | |
| 79 | | JEFFERSONVILLE | Md. | 30,000 | 25 | | Do. | 4,000 | 4 00 | .... | .... | |
| 180 | 1853 | JERSEY CITY | N. J. | 300,000 | — | 5 | Do. | 30,000 | 3 00 | 150 | .... | No sales since formation of Hoboken Co. |
| 81 | 1858 | JERSEY SHORE | Pa. | 15,000 | 25 | — | Do. | 2,000 | 3 70 | .... | .... | |
| 82 | 1856 | JOHNSTOWN | Pa. | 80,000 | 25 | 3 | Do. | 8,000 | 3 00 | .... | .... | |
| 83 | 1857 | JOLIET | Ill. | 300,000 | 100 | — | June & December. | 6,000 | 4 00 | .... | .... | |
| 84 | 1858 | KALAMAZOO | Mich. | 30,000 | 50 | 5 | Do. | 10,000 | 4 00 | .... | .... | |
| 85 | 1860 | KEENE | N. H. | 60,000 | 100 | — | Do. | 4,500 | 4 00 | .... | .... | |
| 86 | 1855 | KEOKUK | Iowa. | 100,000 | 100 | — | January & July. | 10,000 | 4 50 | .... | .... | |
| 87 | 1855 | KINGSTON | Pa. | 50,000 | 50 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 88 | 1859 | KITTANNING | Pa. | 20,000 | — | — | Doubtful. | 5,000 | 4 00 | .... | .... | Said to be a fraud. |
| 89 | 1854 | KNOXVILLE | Tenn. | 63,000 | — | — | April & October. | 4,000 | 5 00 | .... | .... | |
| 190 | 1860 | LACONIA | N. H. | 20,000 | 100 | — | Do. | 4,000 | 6 00 | .... | .... | |
| 91 | 1859 | LA CROSSE CITY | Wis. | 100,000 | 50 | — | June & December. | 10,000 | 5 00 | .... | .... | |
| 92 | 1854 | LAFAYETTE | Ind. | 60,000 | 50 | 4 | January & July. | 8,000 | 3 25 | .... | .... | |
| 93 | 1856 | LAMBERTVILLE | N. J. | 30,000 | 25 | — | Do. | 2,600 | 4 00 | .... | .... | |
| 94 | 1849 | LANCASTER | Pa. | 100,000 | 50 | 4 | Do. | 10,000 | 3 00 | .... | .... | |
| 95 | 1856 | LANCASTER | O. | 25,000 | 100 | 5 | Do. | 5,000 | 3 50 | .... | .... | |
| 96 | 1855 | LANSINBURG | N. Y. | 25,000 | 100 | — | Private Works. | 7,000 | 4 00 | .... | .... | |
| 97 | 1849 | LAWRENCE | Mass. | 200,000 | 100 | 4 | February & August. | 15,000 | 3 50 | .... | .... | |
| 98 | 1859 | LEAVENWORTH | Kansas. | 200,000 | 25 | — | January & July. | 10,000 | 5 00 | .... | .... | |
| 99 | 1856 | LEBANON | Pa. | 26,000 | 50 | — | February & August. | 5,000 | 4 00 | .... | .... | |
| 200 | 1861 | LE ROY | N. Y. | 25,000 | 50 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 1 | 1858 | LEWISBURG | Pa. | 20,000 | 100 | — | January & July. | 4,000 | 4 00 | .... | .... | |
| 2 | 1856 | LEWISTON | Me. | 100,000 | 20 | 3 | Do | 6,000 | 4 00 | .... | .... | |
| 3 | 1856 | LEWISTOWN | Pa. | 30,000 | 50 | 3 | April & October. | 3,000 | 3 10 | .... | .... | |
| 4 | 1853 | LEXINGTON | Ky. | 100,000 | 25 | 4 | January & July. | 5,000 | 4 00 | .... | .... | |
| 5 | 1853 | LITTLE FALLS | N. Y. | 112,000 | 25 | — | Do. | 3,500 | 7 00 | .... | .... | |
| 6 | 1861 | LITTLE ROCK | Ark. | 20,000 | — | — | Do. | 5,000 | 6 00 | .... | .... | |
| 7 | 1858 | LOCKHAVEN | Pa. | 28,000 | — | — | Do. | 3,000 | 4 00 | .... | .... | |
| 8 | | LOCKPORT | N. Y. | 100,000 | 50 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 9 | 1838 | LOUISVILLE | Ky. | 600,000 | 50 | 6 | Do. | 80,000 | 2 50 | 125 | .... | But $481,400 stock has been sold. This Company has a large contingent fund and undivided profit on hand. |
| 210 | 1849 | LOWELL | Mass. | 200,000 | 25 | 5 | Do. | 50,000 | 3 25 | .... | .... | |
| 11 | 1852 | LYNCHBURG | Va. | 70,000 | 25 | 5 | Do. | 6,000 | 3 80 | .... | .... | |
| 12 | 1852 | LYNN | Mass. | 55,000 | 50 | 4 | Do. | 20,000 | 4 00 | .... | .... | |
| 13 | 1859 | LYONS | N. Y. | 30,000 | 100 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 14 | 1852 | MACON | Ga. | 75,160 | 25 | 6 | Do. | 5,000 | 5 00 | .... | .... | |
| 15 | 1851 | MADISON | Ind. | 160,000 | 25 | 3 | Do. | 10,100 | 3 50 | .... | .... | |
| 16 | 1855 | MADISON | Wis. | 100,000 | 25 | — | Do. | 5,000 | 5 00 | .... | .... | |
| 17 | 1854 | MALDEN & MELROSE | Mass. | 50,600 | 25 | 3 | February & August. | 5,000 | 4 00 | .... | .... | |
| 18 | 1852 | MANAYUNK | Pa. | 40,000 | 100 | — | Do. | 7,000 | 4 00 | .... | .... | |
| 19 | 1852 | MANCHESTER | N. H. | 100,000 | 100 | 5 | January & July. | 25,000 | 3 00 | .... | .... | |
| 220 | 1830 | MANHATTAN (N. Y. City) | N. Y. | 4,000,000 | 50 | 5 | Do. | 600,000 | 2 50 | 300 | 375 | |
| 21 | | MANSFIELD | O. | 25,000 | — | — | Do. | 10,000 | 4 00 | .... | .... | |
| 22 | 1854 | MARBLEHEAD | Mass. | 40,000 | 100 | 3 | Do. | 1,000 | 4 00 | .... | .... | |
| 23 | | MARLBORO' | Mass. | 20,000 | — | — | Do. | 8,000 | 4 00 | .... | .... | |
| 24 | | MAUCH CHUNK | Pa. | 50,000 | 50 | — | Do. | 7,000 | 4 00 | .... | .... | |
| 25 | 1857 | MARIETTA | O. | 50,000 | 50 | — | Do. | 7,000 | 4 00 | .... | .... | |
| 26 | 1858 | MARTSVILLE | Cal. | 50,000 | 100 | — | Do. | 4,000 | 12 50 | .... | .... | |
| 27 | 1857 | MASSILON | O. | 20,000 | 25 | — | Do. | 5,000 | 3 00 | .... | .... | |
| 28 | 1855 | MEADVILLE | Pa. | 39,500 | 25 | — | Do. | 4,000 | 3 50 | .... | .... | |
| 29 | | MEDINA | N. Y. | 2,000 | 100 | — | Do. | 2,000 | 7 00 | .... | .... | |
| 230 | 1852 | MEMPHIS | Tenn. | 300,000 | 100 | 5 | June & December. | 12,000 | 3 50 | .... | .... | |
| 31 | | MERIDEN | Ct. | 20,000 | | | Do. | | | .... | .... | |
| 32 | 1859 | METROPOLITAN (N. Y. City) | N. Y. | 1,000,000 | 100 | — | January & July. | 200,000 | 2 50 | .... | .... | |
| 33 | 1859 | MIDDLEBORO' | Mass. | 15,000 | — | — | Private Works. | | 6 00 | .... | .... | |
| 34 | 1853 | MIDDLETOWN | Ct. | 50,000 | 25 | 3 | March & September. | 5,000 | 3 80 | .... | .... | |
| 35 | | MIDDLETOWN | N. Y. | 10,000 | 25 | — | Do. | | | .... | .... | |
| 36 | | MILFORD | Mass. | 20,000 | — | — | Do. | | 4 00 | .... | .... | |
| 37 | | MILLEDGEVILLE | Ga. | 100,000 | 50 | — | Do. | | 5 00 | .... | .... | |
| 38 | | MILTON | Pa. | 10,000 | | | Do. | | | .... | .... | |
| 39 | 1847 | MILWAUKEE | Wis. | 400,000 | 50 | 5 | January & July. | 24,000 | 3 50 | 150 | .... | |
| 240 | 1852 | MOBILE | Ala. | 200,000 | — | — | Do. | 30,000 | 4 50 | .... | .... | |
| 41 | 1836 | MONROE | Mich. | 40,000 | 50 | — | Do. | 5,000 | 3 50 | 50 | .... | |
| 42 | 1852 | MONTGOMERY | Ala. | 100,000 | 25 | 4 | February & August. | 7,000 | 6 00 | .... | .... | |
| 43 | 1856 | MONTPELIER | Vt. | 30,000 | 25 | 3 | January & July. | 5,000 | 4 50 | .... | .... | |
| 44 | 1859 | MORRISANIA | N. Y. | 30,000 | 50 | — | Do. | | 4 00 | .... | .... | |
| 45 | 1859 | MORRISTOWN | N. J. | 18,000 | 50 | — | Do. | 3,500 | 4 00 | .... | .... | |
| 46 | 1854 | MOUNT HOLLY | N. J. | 16,650 | 25 | 3 | April & October. | 2,000 | 7 00 | .... | .... | |
| 47 | | MOUNT VERNON | O. | 50,000 | 100 | — | Do. | | 4 00 | .... | .... | |
| 48 | 1857 | MUSCATINE | Iowa. | 50,000 | 100 | — | January & July. | 3,000 | 4 50 | .... | .... | |
| 49 | 1854 | NANTUCKET | Mass. | 50,000 | 100 | 3 | February & August. | 6,000 | 4 00 | .... | .... | |

## GAS-LIGHT COMPANIES IN THE UNITED STATES.—Continued.

*Compiled from official sources expressly for the* AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

| No. | Chartered. | Town. | State. | Chartered Capital. | Par Val. per Sh. $ | Semi-Ann'l Div. | Dividends Payable. | Population of Gas District. | Price per 1000 Feet. | Asked pr. cent. | Offered pr. cent. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 250 | 1852 | Nashua | N. H. | 45,000 | 50 | 3½ | January & July. | 10,000 | 3 50 | .... | .... | |
| 51 | 1850 | Nashville | Tenn. | 260,000 | 50 | 5 | Do. | 25,000 | 3 50 | .... | .... | |
| 52 | 1858 | Natchez | Miss. | 46,000 | 50 | — | Do. | 20,000 | 5 00 | .... | .... | |
| 53 | 1852 | New Albany | Ind. | 200,000 | 50 | 3½ | Do. | 16,000 | 3 50 | .... | .... | |
| 54 | 1846 | Newark | N. J. | 362,000 | 50 | 5⅛ | Do. | 45,000 | 3 62 | 130 | .... | Always a favorite stock. |
| 55 | 1856 | Newark | O. | 30,000 | 100 | — | Do. | 7,000 | 5 40 | .... | .... | |
| 56 | 1852 | New Bedford | Mass. | 130,000 | 100 | 5 | Do. | 15,000 | 2 90 | 102 | .... | Well managed and kept quiet. |
| 57 | 1859 | Newbern | N. C. | 22,000 | 100 | 6 | Do. | 6,000 | 3 50 | .... | .... | |
| 58 | | New Britain | Ct. | 30,000 | 20 | 5 | Do. | 3,000 | 4 00 | .... | .... | |
| 59 | 1851 | New Brunswick | N. J. | 100,000 | 20 | 4 | Do. | 8,000 | 3 00 | 115 | .... | |
| 260 | 1852 | Newburg | N. Y. | 67,000 | 20 | 4 | Do. | 10,000 | 4 00 | 105 | .... | |
| 61 | 1852 | Newburyport | Mass. | 150,000 | 10 | 4 | Do. | 9,000 | 4 00 | 92½ | .... | |
| 62 | 1857 | Newcastle | Del. | 32,300 | 10 | 3 | Do. | 4,000 | 4 00 | 90 | .... | |
| 63 | 1847 | New Haven | Ct. | 250,000 | 25 | 4 | Do. | 30,000 | 3 00 | 155 | .... | None in market. |
| 64 | 1853 | New London | Ct. | 70,000 | 50 | 3 | Do. | 12,000 | 4 00 | 105 | .... | Do. |
| 65 | 1835 | New Orleans | La. | 1,500,000 | 100 | 6 | Do. | 120,000 | 4 50 | 180 | .... | |
| 66 | 1853 | Newport | R. I. | 130,200 | 100 | 4 | Do. | 10,000 | 3 50 | 112 | .... | |
| 67 | 1854 | Newton & Watertown | Mass. | 300,000 | 100 | 2 | Do. | 10,000 | 4 00 | .... | .... | |
| 68 | | Newton | N. J. | 30,000 | — | — | Do. | 3,000 | 4 00 | .... | .... | |
| 69 | | Newton | Pa. | 20,000 | 50 | — | Do. | 2,500 | 4 00 | .... | .... | |
| 270 | 1823 | New York | N. Y. | 1,000,000 | 50 | 5 | May & November. | 100,000 | 2 50 | 300 | .... | |
| 71 | 1859 | Niagara Falls | N. Y. | 15,000 | 25 | — | Do. | 3,000 | 4 00 | 90 | .... | |
| 72 | | Norfolk | Va. | 60,000 | 25 | — | Do. | 40,000 | 4 00 | .... | .... | |
| 73 | 1853 | Norristown | Pa. | 41,700 | 25 | 4 | June & December. | 8,000 | 3 50 | .... | .... | |
| 74 | 1855 | North Attleboro' | Mass. | 50,000 | 100 | 3 | Do. | 6,000 | 4 00 | .... | .... | |
| 75 | | Northern Liberties | Pa. | 400,000 | 25 | 7½ | City Works. | 40,000 | 2 50 | .... | .... | |
| 76 | | North Adams | Mass. | 25,000 | — | — | March & September. | 30,000 | 4 00 | .... | .... | |
| 77 | 1856 | Northampton | Mass. | 35,000 | 25 | 3 | January & July. | 4,500 | 4 00 | .... | .... | |
| 78 | 1859 | North Bridgewater | Mass. | 16,000 | 100 | 4 | June & December. | 1,000 | 7 00 | .... | .... | |
| 79 | 1856 | Norwalk | Ct. | 30,000 | 150 | 4 | February & August. | 6,000 | 4 00 | .... | .... | |
| 80 | 1859 | Norwalk | O. | 30,000 | 25 | — | January & July. | 4,000 | 4 00 | .... | .... | |
| 281 | 1854 | Norwich | Ct. | 75,000 | 25 | 3½ | Do. | 12,000 | 3 50 | .... | .... | |
| 82 | 1861 | Norwich | N. Y. | 12,000 | 50 | — | Do. | 2,500 | 4 00 | .... | .... | |
| 83 | 1859 | Nyack | N. Y. | 20,000 | 100 | — | Do. | 2,500 | 4 00 | .... | .... | |
| 84 | 1860 | Oberlin | O. | 10,000 | — | — | Do. | 1,200 | 4 00 | .... | .... | |
| 85 | 1855 | Ogdensburg | N. Y. | 75,000 | 50 | 5 | Do. | 9,000 | 4 00 | .... | .... | |
| 86 | 1859 | Orange | N. J. | 65,000 | 25 | — | Do. | 6,000 | 3 50 | .... | .... | |
| 87 | 1852 | Oswego | N. Y. | 81,250 | 100 | 3½ | Do. | 15,000 | 4 00 | 105 | .... | Good works, built by Hoy, Jr., & Kennedy. |
| 88 | 1855 | Ottawa | Ill. | 45,000 | 100 | 6½ | Do. | 6,000 | 4 00 | .... | .... | |
| 89 | 1856 | Owego | N. Y. | 40,000 | 50 | 3½ | Do. | 5,000 | 4 00 | .... | .... | |
| 290 | 1860 | Owensboro' | Ky. | 25,000 | 25 | — | Do. | 4,000 | 3 50 | .... | .... | |
| 91 | 1856 | Paducah | Ky. | 75,000 | 100 | — | May & November. | 4,000 | 5 00 | .... | .... | |
| 92 | 1861 | Painsville | O. | 40,000 | 25 | 5 | Do. | 2,500 | 5 00 | .... | .... | |
| 93 | 1856 | Palmyra | N. Y. | 12,000 | 25 | — | January & July. | 3,000 | 7 00 | .... | .... | |
| 94 | 1847 | Paterson | N. J. | 125,000 | 25 | 3 | Do. | 20,000 | 3 50 | 95 | .... | Surplus $10,000, May 15, 1863. |
| 95 | 1850 | Pawtucket | R. I. | 75,000 | 50 | 4 | Do. | 12,000 | 3 00 | .... | .... | Works leased to Geo. S. Sutton. |
| 96 | 1855 | Peekskill | N. Y. | 31,000 | 50 | 3 | June & December. | 4,000 | 3 00 | .... | .... | |
| 97 | 1860 | Penn Yan | N. Y. | 12,000 | 50 | 5 | Do. | 3,000 | 4 00 | .... | .... | What is this Company doing? |
| 98 | 1859 | Peoples', Chicago | Ill. | 500,000 | 50 | New | Do. | 100,000 | 2 50 | .... | .... | |
| 99 | 1855 | Peoria | Ill. | 100,000 | 50 | 4 | Do. | 8,000 | 3 50 | .... | .... | |
| 300 | 1852 | Petersburg | Va. | 120,000 | — | 5 | January & July. | 20,000 | 3 80 | .... | .... | |
| 1 | 1841 | Philadelphia | Pa. | 3,000,000 | 50 | — | City Works. | 650,000 | 2 25 | .... | .... | |
| 2 | 1855 | Piqua | O. | 50,000 | 50 | — | January & July. | 6,500 | 4 00 | .... | .... | |
| 3 | 1835 | Pittsburg | Pa. | 300,000 | 100 | 5 | Do. | 60,000 | 1 50 | 115 | .... | |
| 4 | 1854 | Pittsfield | Mass. | 50,000 | 100 | 5 | Do. | 4,500 | 4 00 | .... | .... | |
| 5 | 1858 | Placerville | Cal. | 30,000 | 50 | — | Do. | 4,500 | 10 00 | .... | .... | |
| 6 | 1860 | Plainfield | N. J. | 25,000 | 50 | — | Do. | 2,500 | 4 00 | .... | .... | |
| 7 | 1859 | Plattsburg | N. Y. | 16,000 | 50 | — | January & July. | 5,000 | 7 00 | .... | .... | |
| 8 | 1858 | Plymouth | Mass. | 40,000 | 100 | — | April & October. | 8,000 | 4 00 | .... | .... | |
| 9 | 1860 | Port Chester | N. Y. | 50,000 | 50 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 310 | 1860 | Port Jervis | N. Y. | 20,000 | 100 | — | Do. | 3,000 | 4 10 | .... | .... | |
| 11 | 1849 | Portland | Me. | 300,000 | 50 | 4 | January & July. | 30,000 | 3 00 | .... | .... | |
| 12 | 1859 | Portland | Oreg. | 50,000 | 50 | — | Do. | 3,500 | 8 00 | .... | .... | |
| 13 | 1859 | Port Lavacca | Texas. | 50,000 | 100 | — | Do. | 2,500 | 7 00 | .... | .... | |
| 14 | 1851 | Portsmouth | N. H. | 70,000 | 100 | 8 | April & October. | 6,500 | 3 70 | .... | .... | |
| 15 | 1855 | Portsmouth | O. | 50,000 | 50 | 4 | January & July. | 10,000 | 3 50 | .... | .... | |
| 16 | 1855 | Portsmouth | Va. | 100,000 | 50 | 4 | Do. | 4,000 | 4 00 | .... | .... | |
| 17 | 1856 | Pottstown | Pa. | 20,000 | 50 | 3 | Do. | 3,500 | 4 00 | .... | .... | |
| 18 | 1850 | Pottsville | Pa. | 110,000 | 50 | 2 | Do. | 10,000 | 3 50 | .... | .... | |
| 19 | 1850 | Poughkeepsie | N. Y. | 84,000 | 25 | 4 | March & September. | 15,000 | 3 50 | 120 | 110 | |
| 320 | 1848 | Providence | R. I. | 1,000,000 | 50 | 4 | January & July. | 60,000 | 3 00 | 122 | .... | |
| 21 | 1853 | Quincy | Ill. | 300,000 | 50 | 4 | June & December. | 12,000 | 3 50 | .... | .... | |
| 22 | | Quincy | Mass. | 00,000 | 00 | — | Do. | 00,000 | 0 00 | .... | .... | |
| 23 | 1855 | Racine | Wis. | 43,500 | 26 | — | Do. | 7,000 | 3 50 | .... | .... | |
| 24 | 1857 | Rahway | N. J. | 50,000 | 20 | — | January & July. | 5,000 | 4 00 | .... | .... | |
| 25 | 1858 | Raleigh | N. C. | 25,000 | 100 | 6 | May & Novrmber. | 5,000 | 6 00 | .... | .... | |
| 26 | 1848 | Reading | Pa. | 100,000 | 25 | 4 | January & July. | 25,000 | 3 00 | .... | .... | |
| 27 | 1851 | Richmond | Va. | 341,975 | — | — | City Works. | 30,000 | 3 00 | .... | .... | Jeff. Davis has extinguished the gas-lights of Richmond, Va. |
| 28 | 1859 | Richmond | Mass. | 40,000 | 25 | — | January & July. | 3,000 | 4 00 | .... | .... | |
| 29 | 1859 | Ripley | O. | 30,000 | 50 | — | Do | 2,000 | 4 50 | .... | .... | |
| 330 | 1852 | Rochester | N. Y. | 200,000 | 50 | 5 | Do. | 50,000 | 2 50 | .... | .... | |
| 31 | 1857 | Rockford | Ill. | 40,000 | 50 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 32 | 1854 | Rock Island | Ill. | 100,000 | 50 | — | Do. | 6,000 | 4 50 | .... | .... | |
| 33 | 1854 | Rockland | Me. | 50,000 | 100 | — | Do. | 6,000 | 4 40 | .... | .... | |
| 34 | 1852 | Rome | N. Y. | 35,000 | 100 | 3½ | Do. | 10,000 | 3 60 | .... | .... | |
| 35 | 1854 | Rondout and Kingston | N. Y. | 65,150 | 20 | 3½ | June & December. | 10,000 | 3 80 | .... | .... | |
| 36 | 1854 | Roxbury | Mass. | 150,000 | 100 | 5 | January & July. | 20,000 | 3 50 | .... | .... | |
| 37 | 1859 | Rutland | Vt. | 20,000 | 25 | — | Do. | 4,000 | 3 50 | .... | .... | |
| 38 | | Saco | Me. | 71,600 | 100 | 3½ | April & October. | 8,000 | 4 00 | .... | .... | |
| 39 | 1857 | Sacramento | Cal. | 500,000 | 100 | — | Do. | 40,000 | 10 00 | .... | .... | |
| 340 | 1859 | Sag Harbor | N. Y. | 20,000 | — | — | Do. | 4,000 | 4 00 | .... | .... | |
| 41 | 1858 | Saint Albans | Vt. | 15,000 | 20 | — | Do. | 3,000 | 7 00 | .... | .... | |
| 42 | | Saint Johnsbury | Vt. | 30,000 | 25 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 43 | 1857 | Saint Joseph | Mo. | 50,000 | 100 | 5 | January & July. | 6,000 | 5 00 | .... | .... | |
| 44 | 1839 | Saint Louis | Mo. | 600,000 | 50 | — | June & December. | 180,000 | 3 50 | .... | .... | |
| 45 | 1857 | Saint Paul | Min. | 200,000 | 50 | 3 | January & July. | 10,000 | 6 00 | .... | .... | Surplus $10,000, May 15, 1863. |
| 46 | 1856 | Salem | N. J. | 30,000 | 25 | 3 | Do. | 5,000 | 3 86 | .... | .... | |
| 47 | 1850 | Salem | Mass. | 200,000 | 100 | 4 | February & August. | 30,000 | 3 24 | .... | .... | |
| 48 | 1859 | Salem | O. | 25,000 | 20 | — | Do. | 3,000 | 3 00 | .... | .... | |
| 49 | 1859 | Salisbury | N. C. | 14,600 | 50 | 6 | May & November. | 3,500 | 6 60 | .... | .... | |
| 350 | | Salisbury Mills | Mass. | 1,250 | 25 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 51 | | Salmon Falls | Me. | 25,000 | 100 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 52 | | San Antonio | Texas. | 75,000 | 20 | — | Do. | 40,000 | 6 00 | .... | .... | |
| 53 | | San Diego | Cal. | 30,000 | 50 | — | Do. | 50,000 | 10 00 | .... | .... | |
| 54 | 1854 | Sandusky | O. | 75,000 | 50 | — | April & October. | 9,000 | 3 00 | .... | .... | |
| 55 | 1859 | Sandwich | Mass. | 10,000 | — | — | Private Works. | 2,000 | 3 50 | .... | .... | |
| 56 | 1862 | San Francisco | Cal. | 1,000,000 | 100 | 6 | Do. | 50,000 | 8 00 | 110 | .... | |
| 57 | 1853 | Saratoga Springs | N. Y. | 39,000 | 100 | — | January & July. | 6,000 | 3 60 | 70 | .... | |
| 58 | | Saugreties | N. Y. | 30,000 | 20 | — | Do. | 4,000 | 3 00 | .... | .... | |
| 59 | 1849 | Savannah | Ga. | 200,000 | 25 | 5 | Do. | 10,000 | 3 75 | .... | .... | |
| 360 | 1851 | Schenectady | N. Y. | 50,000 | — | — | Private Works. | 11,000 | 4 00 | .... | .... | |
| 61 | 1858 | Scranton, Gas and Water | Pa. | 100,000 | 25 | — | January & July. | 6,000 | 3 80 | .... | .... | About trying Water-Gas. |
| 62 | 1857 | Selma | Ala. | 20,000 | 100 | — | Do. | 2,000 | 5 00 | .... | .... | |
| 63 | 1856 | Seneca Falls | N. Y. | 80,000 | 50 | 2 | Do. | 6,000 | 4 00 | .... | .... | |
| 64 | | Shreveport | La. | 40,000 | 25 | — | Do. | 3,000 | 0 50 | .... | .... | |
| 65 | 1856 | Sing Sing | N. Y. | 40,000 | 100 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 66 | | Smyrna | Del. | | | | | | 4 00 | .... | .... | |
| 67 | 1860 | South Adams | Mass. | 10,000 | 25 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 68 | 1859 | South Bridge | Mass. | 5,000 | 25 | — | Do. | 4,010 | 6 00 | .... | .... | |
| 69 | | South Boston | Mass. | 200,000 | 50 | — | Do. | 60,000 | 3 25 | 110 | .... | |
| 370 | | Springfield | O. | 200,000 | 100 | — | Do | 20,000 | 3 50 | .... | .... | |
| 71 | 1854 | Springfield | Ill. | 75,000 | 50 | — | January & July. | 10,000 | 3 50 | .... | .... | |
| 72 | 1848 | Springfield | Mass. | 100,000 | 500 | 5 | February & August. | 10,000 | 3 60 | 140 | .... | |
| 73 | 1855 | Stamford | Ct. | 6,250 | 25 | 5 | April & October. | 3,000 | 3 50 | .... | .... | |
| 74 | 1857 | Staten Island | N. Y. | 150,000 | 50 | 5 | January & July. | 26,000 | 4 00 | 95 | .... | |

## GAS-LIGHT COMPANIES IN THE UNITED STATES.—Continued.

*Compiled from official sources expressly for the* AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

| No. | Chartered. | Town. | State. | Chartered Capital. | Par Val. per Sh. $ | Semi-Ann'l Div'd. | Dividends Payable. | Population of Gas District. | Price per 1000 Feet. | Asked pr. cent. | Offered pr. cent. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 375 | 1859 | Staunton | Va. | 18,000 | 50 | 6 | January & July. | 4,000 | 7 00 | .... | .... | |
| 76 | | Steubenville | O. | 150,000 | 100 | — | Do. | 15,000 | 4 00 | .... | .... | |
| 77 | | Stockton | Cal. | 50,000 | — | — | Do. | 8,000 | 10 00 | .... | .... | |
| 78 | 1848 | Syracuse | N. Y. | 125,000 | 25 | 5 | March & September. | 25,000 | 3 00 | 112 | .... | |
| 79 | | Tamaqua | Pa. | 40,000 | 25 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 380 | 1859 | Tarrytown and Irvington | N. Y. | 70,000 | 50 | — | January & July. | 3,000 | 4 00 | .... | .... | |
| 81 | 1853 | Taunton | Mass. | 100,000 | 50 | 4 | Do. | 10,000 | 4 00 | .... | .... | |
| 82 | | Terre Haute | Ind. | 100,000 | 100 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 83 | | Thompsonville | Ct. | 25,000 | 50 | — | [illegible] | 4,000 | 4 50 | .... | .... | |
| 84 | | Tiffin | O. | 25,000 | 20 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 85 | 1853 | Toledo | O. | 100,000 | 50 | 3 | Do. | 8,000 | 3 50 | .... | .... | |
| 86 | 1847 | Trenton | N. J. | 100,000 | 20 | 4 | Do. | 15,000 | 3 60 | .... | 110 | |
| 87 | 1848 | Troy | N. Y. | 200,000 | 100 | 4 | June & December. | 35,000 | 3 60 | 160 | .... | |
| 88 | 1856 | Urbana | O. | 30,000 | 25 | — | April & October. | 3,500 | 4 00 | .... | .... | |
| 89 | 1849 | Utica | N. Y. | 80,000 | 100 | 4 | Do. | 22,000 | 3 60 | .... | .... | |
| 390 | 1853 | Vicksburg | Miss. | 66,000 | 50 | — | March & September. | 4,000 | 4 50 | .... | .... | |
| 91 | 1859 | Vincennes | Ind. | 25,000 | 100 | — | January & July. | 2,000 | 4 00 | .... | .... | |
| 92 | 1858 | Walden | N. Y. | 2,500 | — | — | Private Works. | 1,000 | 6 00 | .... | .... | |
| 93 | 1853 | Waltham | Mass. | 100,000 | 100 | 4 | January & July. | 3,000 | 4 00 | .... | .... | |
| 94 | 1857 | Ware | Mass. | 30,000 | 20 | — | Do. | 3,500 | 4 00 | .... | .... | |
| 95 | 1861 | Warren | O. | 30,000 | 50 | — | Do. | 4,000 | 3 00 | .... | .... | |
| 96 | 1854 | Warren | R. I. | 20,000 | 25 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 97 | 1855 | Washington | D. C. | 500,000 | 20 | 5 | Do. | 50,000 | 3 25 | 150 | 148 | |
| 98 | 1859 | Washington | N. C. | 15,000 | 100 | — | April & October. | 1,500 | 6 00 | .... | .... | |
| 99 | 1848 | Washington | Pa. | 20,000 | 25 | 4 | January & July. | 4,000 | 3 00 | .... | .... | |
| 400 | 1854 | Waterbury | Ct. | 100,000 | 25 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 1 | 1852 | Waterford | N. Y. | 12,000 | 25 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 2 | 1852 | Watertown | N. Y. | 20,000 | 100 | — | Do. | 10,000 | 7 00 | .... | .... | |
| 3 | 1856 | Watertown | Wis. | 25,000 | 100 | — | Do. | 5,000 | 5 00 | .... | .... | |
| 4 | 1858 | Wautoma | Wis. | 30,000 | 50 | — | Do. | 3,000 | 4 50 | .... | .... | |
| 5 | 1857 | Waverly | Miss. | 20,000 | 100 | — | April & October. | 4,000 | 5 00 | .... | .... | |
| 6 | 1854 | West Cambridge | Mass. | 60,000 | 100 | — | February & August. | 10 000 | 4 00 | .... | .... | |
| 7 | 1852 | Westchester | Pa. | 100,000 | 25 | 2½ | Do. | 3,500 | 3 50 | .... | .... | |
| 8 | | Westfield | Mass. | 25,000 | 100 | 6 | Do. | 4,000 | 4 00 | .... | .... | |
| 9 | | Weston | O. | 20,000 | 25 | — | Do. | | 5 00 | .... | .... | |
| 410 | 1857 | West Point | N. Y. | 50,000 | — | — | United States Military | Academy. | 2 00 | .... | .... | |
| 11 | 1853 | West Troy | N. Y. | 100,000 | 50 | 3 | January & July. | 10,000 | 3 60 | 85 | .... | |
| 12 | 1850 | Wheeling | Va. | 75,000 | 25 | 6 | Do. | 12,000 | 2 70 | .... | .... | |
| 13 | | White Plains | N. Y. | 20,000 | 20 | — | Do. | | | .... | .... | |
| 14 | 1856 | Wilkesbarre | Pa. | 50,000 | 50 | — | May & November. | 4,000 | 3 80 | .... | .... | |
| 15 | 1850 | Williamsburg | N. Y. | 500,000 | 50 | 5 | January & July. | 60,000 | 3 50 | .... | .... | |
| 16 | 1858 | Williamsburg | Va. | 30,000 | 25 | — | Do. | 3,000 | 4 00 | .... | .... | Camp-fires of the Union Army light up this place at present. |
| 17 | 1857 | Williamsport | Pa. | 70,000 | 25 | 4 | Do. | 3,500 | 3 80 | .... | .... | |
| 18 | 1859 | Willimantic | Ct. | 12,000 | — | — | Do. | 2,500 | 3 50 | .... | .... | |
| 19 | 1853 | Wilmington | N. C. | 60,000 | 50 | 5 | Do. | 8,000 | 5 00 | .... | .... | |
| 420 | 1852 | Wilmington | Del. | 200,000 | 50 | 5 | February & August. | 20,000 | 3 00 | .... | .... | |
| 21 | 1854 | Winchester | Va. | 86,000 | 50 | 6 | January & July. | 5,000 | 4 00 | .... | .... | |
| 22 | | Woburn | Mass. | 20,000 | — | — | Do. | 3,000 | 4 00 | .... | .... | |
| 23 | 1856 | Woodstock | Vt. | 10,000 | 50 | 4 | Do. | 4,000 | 6 00 | .... | .... | |
| 24 | 1853 | Woonsocket | R. I. | 82,600 | 100 | 4 | April & October. | 4,000 | 3 50 | .... | .... | |
| 25 | 1856 | Wooster | O. | 25,000 | 50 | — | January & July. | 6 000 | 3 00 | .... | .... | |
| 26 | 1849 | Worcester | Mass. | 160,000 | 100 | 5 | Do. | 15,000 | 3 50 | .... | .... | |
| 27 | 1855 | Xenia | O. | 40,000 | 50 | — | Do. | 3,000 | 4 00 | .... | .... | |
| 28 | 1854 | Yonkers | N. Y. | 75,000 | 50 | 3½ | Do. | 6,500 | 4 00 | 102½ | .... | |
| 29 | 1849 | York | Pa. | 40,000 | 57 | 3 | June & December. | 10,000 | 3 50 | .... | .... | |
| 430 | | Yorkville | S. C. | 20,000 | 25 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 31 | 1858 | Ypsilanti | Mich. | 20,000 | 50 | 5 | February & August. | 6,000 | 4 00 | .... | .... | |
| 32 | 1850 | Yreka | Cal. | 30,000 | 100 | — | Do. | 2,000 | 10 00 | .... | .... | |
| 33 | 1848 | Zanesville | O. | 44,600 | 25 | 4 | Do. | 10,000 | 3 50 | .... | .... | |

## GAS-LIGHT COMPANIES IN THE BRITISH PROVINCES OF NORTH AMERICA.

| No. | Chartered. | Town. | Province | Chartered Capital. | Par Val. per Sh. $ | Semi-An'l Div'd. | Dividends Payable. | Population of Gas District. | Price per 1000 Feet. | Asked pr. cent. | Offered pr. cent. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1854 | Belleville | C. W. | 33,040 | 100 | 4 | January & July. | 1,200 | 5 00 | .... | .... | |
| 2 | 1854 | Brantford | C. W. | 32,000 | 100 | 2½ | Do. | | | .... | .... | |
| 3 | | Brockville | C. W. | 50,000 | — | — | Do. | 5,000 | 4 00 | .... | .... | |
| 4 | | Chatham | N. B. | 50,000 | — | — | | | | .... | .... | |
| 5 | 1854 | Charlotte Town | P. E. I. | 50,000 | 100 | 5 | Do. | 3,000 | 3 50 | .... | .... | |
| 5 | 1857 | Cobourg | C. W. | 30,000 | — | — | February & August. | 4,000 | | .... | .... | |
| 7 | | Dundas | C. W. | 30,000 | — | — | Do. | 6,000 | 4 00 | .... | .... | |
| 8 | | Frederick | N. B. | 50,000 | — | — | Do. | | | .... | .... | |
| 9 | 1843 | Halifax | N. S. | 160,000 | 40 | 7 | May. | 30,000 | 3 00 | .... | .... | |
| 10 | 1850 | Hamilton | C. W. | 125,000 | 40 | 5 | March & September. | 20,000 | 3 50 | .... | .... | |
| 11 | 1848 | Kingston | C. W. | 80,000 | 100 | — | Do. | 6,000 | 3 50 | .... | .... | |
| 12 | 1853 | London | C. W. | 100,000 | 20 | 5 | May & November. | 5,000 | 5 00 | .... | .... | |
| 13 | 1847 | Montreal | C. E. | 360,000 | 40 | — | March & September. | 80,000 | 3 00 | .... | .... | |
| 14 | 1854 | Ottawa | C. W. | 40,000 | 40 | 5 | Do. | 5,000 | 4 50 | .... | .... | |
| 15 | 1859 | Point Levi | C. E. | 25,000 | 25 | — | January & July. | 4,000 | 3 50 | .... | .... | |
| 16 | 1859 | Port Hope | C. W. | 28,000 | 20 | 4 | May & November. | 4,500 | 3 50 | .... | .... | |
| 17 | 1847 | Quebec | C. E. | 200,000 | 200 | 4 | January & July. | 60,000 | 3 00 | .... | .... | |
| 18 | 1848 | Saint Catherine's | C. W. | 80,000 | 20 | — | May & November. | 7,000 | 4 50 | .... | .... | |
| 19 | 1859 | Saint Hyacinthe | C. E. | 15,000 | 20 | — | Do. | 4,000 | 4 00 | .... | .... | |
| 20 | | Saint John | N. B. | 170,000 | 85 | — | June & December. | 25,000 | 3 50 | 110 | 110 | Sales at this figure. |
| 21 | | Saint John's | N. F. | 50,000 | — | 4 | Do. | 30,000 | | .... | .... | |
| 22 | 1858 | Sorel | C. E. | 14,000 | 20 | 4 | Do. | 4,000 | 3 00 | .... | .... | |
| 23 | 1848 | Toronto | C. W. | 400,000 | 100 | 4 | February & August. | 50,000 | 3 33½ | .... | .... | |

## GAS-LIGHT COMPANIES IN CUBA, MEXICO, SOUTH AMERICA AND NEW ZEALAND.

| No. | Chartered. | Town. | State. | Chartered Capital. | Par Val. per Sh. $ | Semi-An'l Div'd. | Dividends Payable. | Population of Gas District. | Price per 1000 Feet. | Asked pr. cent. | Offered pr. cent. | REMARKS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Callao | Chile. | | — | — | January & July. | 20,000 | 7 00 | .... | .... | |
| 2 | | Cardenas | Cuba. | 50,000 | — | — | Do. | 180,000 | 5 00 | .... | .... | |
| 3 | 1857 | Compania Cubana | Hav'a | 500,000 | 500 | 10 | Do. | | | .... | .... | |
| 4 | | Cienfuegos | Cuba. | | — | — | Do. | 12,000 | 5 00 | .... | .... | These four towns are lighted by the Compania Cubana of Havana. |
| 5 | | Guanabacoa | Cuba. | | — | — | Do. | 14,000 | 5 50 | .... | .... | |
| 6 | | Regla | Cuba. | | — | — | Do. | 10,000 | 5 00 | .... | .... | |
| 7 | | Trinidad | Cuba. | | — | — | Do. | 16,000 | 5 00 | .... | .... | |
| 8 | | Guyaquil | S. A. | 150,000 | — | — | Do. | 35,000 | | .... | .... | |
| 9 | | Havana | Cuba. | 1,250,000 | 500 | 7½ | Do. | 300,000 | 5 00 | .... | .... | |
| 10 | | Lima | Peru. | 100,000 | — | — | Do. | 150,000 | | .... | .... | |
| 11 | | Maranham (Chartered) | | | — | — | Do. | | | .... | .... | |
| 12 | | Matanzas | Cuba. | 50,000 | — | — | Do. | 180,000 | 8 50 | .... | .... | |
| 13 | | Mexico City | Mex. | 550,000 | — | — | Do. | | | .... | .... | |
| 14 | | Montevideo | S. A. | 500,000 | — | — | Do. | | | .... | .... | |
| 15 | | Para (Chartered) | | | — | — | Do. | | | .... | .... | |
| 16 | 1854 | Rio de Janeiro | S. A. | 1,200,000 | 500 | 7½ | Do. | 300,000 | 4 00 | .... | .... | |
| 17 | | San Iago | Chile. | 500,000 | — | — | Do. | 180,000 | 7 00 | .... | .... | |
| 18 | 1857 | Saint Jago de Cuba | Cuba. | 450,000 | 500 | — | Do. | 25,000 | 5 00 | .... | .... | |
| 19 | | Valparaiso | Chile. | 500,000 | — | — | Do. | 85,000 | 6 00 | .... | .... | |
| 20 | | Vera Cruz | Mex. | 500,000 | — | — | Do. | | | .... | .... | |
| 21 | | Ville Clara | Cuba. | 50,000 | — | — | Do. | | | .... | .... | |
| 22 | | Auckland | N. Z. | | — | — | | | | .... | .... | |

## ON THE UTILIZATION OF PEAT, WITH REFERENCE MORE PARTICULARLY TO THE MANUFACTURE OF HYDRO-CARBON OILS.

By B. H. Paul, Ph. D.

(*From the London Artizan.*)

[Continued from page 343.]

The amount of tar obtainable from the peat is of considerable importance. The amount obtained by Mr. Sullivan from Irish peat, in no instance amounting to 5 per cent., and on the average 2.5 per cent., is far too small to admit of the peat being worked profitably.

The influence of an increased yield of tar on the cost of the products will be very clearly apparent from the following table, in which the quantity of peat worked per week is throughout taken as 100 tons, and the yield of tar varying from 1 to 19 per cent.:

| Percentage yield of Tar from Peat. | Quantity of Peat worked per week. | Tar produced. Tons. | Tar produced. Gallons. | Refined Oil and Paraffin. | Cost of Tar made. Peat 2s. per ton. | Labor. | Equal. | Cost of Tar per ton. | Cost of tar equivalent to 1 gallon refined products; these being 100 gallons = 1 ton tar. | Cost of refining p. gal | Cost of refined oil per gallon. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | gals | £ | £ | £ | £ s. d. | s. d. | d | s. d. |
| 1 | 100 | 1 | 233 | 107 | 10 | 10 | 20 | 20 0 0 | 4 0 | 6 | 4 6 |
| 2 | 100 | 2 | 460 | 214 | 10 | 10 | 20 | 10 0 0 | 2 0 | 6 | 2 6 |
| 3 | 100 | 3 | 699 | 321 | 10 | 10 | 20 | 6 6 8 | 1 4 | 6 | 1 10 |
| 4 | 100 | 4 | 932 | 428 | 10 | 10 | 20 | 5 0 0 | 1 0 | 6 | 1 6 |
| 5 | 100 | 5 | 1165 | 535 | 10 | 10 | 20 | 4 0 0 | 0 10 | 6 | 1 4 |
| 6 | 100 | 6 | 1398 | 642 | 10 | 10 | 20 | 3 6 8 | 0 8 | 6 | 1 2 |
| 7 | 100 | 7 | 1631 | 749 | 10 | 10 | 20 | 2 17 2 | 0 7 | 6 | 1 1 |
| 8 | 100 | 8 | 1864 | 856 | 10 | 10 | 20 | 2 10 0 | 0 6 | 6 | 1 0 |
| 9 | 100 | 9 | 2097 | 963 | 10 | 10 | 20 | 2 4 6 | 0 5½ | 6 | 0 11½ |
| 10 | 100 | 10 | 2336 | 1070 | 10 | 10 | 20 | 2 0 0 | 0 5 | 6 | 0 11 |

It will be seen that a yield of 3 per cent. tar from the peat would, at the cost of peat and labor assumed in this table, make the cost of the tar £6 6*s.* 8*d.* per ton, and that if the refined product from the ton of tar amounted to only 100 gallons, the cost of the oil would be 1*s.* 10*d.* per gallon, or far too much to admit of profitable working.

To determine this point, therefore, with certainty, an experimental distillation of the Lews peat—air dried—was made in a close retort; it gave the following results:

| | | |
|---|---|---|
| Tar | | 9.855 |
| Charcoal | Carbon | 30.25 |
| | Ash | 1.25 |
| | | 31.500 |
| Water | | 37.875 |
| Gas | | 21.549 |
| | | 100.000 |

which were subsequently confirmed by trials on a larger scale.

The tar thus obtained, as I have already mentioned, yielded 42 per cent. by weight of refined oil and paraffin; so that the 100 tons of peat, as compared with the average of Irish peat, would yield:

| | Tons. | Tar galls. | Crude Oil. galls. | Refined Oil. galls. | Creosote. galls. |
|---|---|---|---|---|---|
| Lews peat, | 100 .. | 2,097 — | 1,629 — | 999 | 630. |
| Irish peat, | 100 .. | 479 — | 686 — | 357 | 343. |

In this case, taking the cost of the peat as before at 2*s.* per ton, the quantity of Lews peat, equivalent to one gallon of refined products, would cost only 2½*d.* instead of 7*d.*, as in the case of the Irish peat; and adding in each case 1*s.* per gallon as the cost of manufacture, the refined oil from Lews peat would cost 1*s.* 2½*d.* per gallon, while that from Irish peat would cost 1*s.* 7*d.* per gallon.

In the above table the cost of manufacture is taken from the results of actual experience; but the percentage of tar, which I have just referred to as obtainable from the Lews peat, was obtained by distilling it in a close retort. This not the plan that has been adopted practically, and it is possible that in distilling peat with close retorts, the cost of manufacture would be increased beyond what has been quoted in the above table, by the necessity of using peat for fuel; if, for instance, it should be found that the charcoal obtained from one operation was insufficient for the distillation of a subsequent charge of peat. If that were the case, the working with close retorts would involve an additional expense for fuel. The peat thus consumed as fuel would, in reality, reduce the actual percentage of tar obtained from the peat consumed, and if one-third the weight of the peat were consumed as fuel, the percentage of tar obtained would be, in fact, not 9.8 per cent., but only something like 6 per cent.

At the outset of the inquiry into the working of the Lews peat, it therefore became an important question whether it would not be more economical to work with kilns, as was done at the Irish Works; whether the large yield of tar obtained with retorts was not, to some extent, only apparent; and whether a smaller yield of tar, obtained by means of kilns, might be more advantageous by reason of their smaller original cost, and of their requiring a smaller expense for labor and fuel in working than retorts.

The small amount of tar obtained from the peat at the Irish works was, no doubt, partly a consequence of the inferior character of the peat; but a little consideration of the circumstances under which the peat was distilled will suffice to show that it was mainly attributable to the use of the blast employed in maintaining the combustion, in the same manner that it is employed in an iron-smelting furnace. Some results are indeed mentioned by Mr. Reece, and quoted by Sir Robert Kane, in his report, which clearly suggest this view. Thus, for instance, Mr. Reece states that, in the experiments made in Antrim, in 1850, with a kiln 3ft. diameter, and 15 ft. deep:

When the quantity of peat distilled during 24 hours was 1½ tons, the produce of tar was 70 lbs. per ton = 3.1 per cent.

When the quantity of peat distilled during 24 hours was 2 tons, the produce of tar was 40 lbs. per ton = 1.8 per cent.

When the quantity of peat distilled during 24 hours was 3 tons, the produce of tar was 22 lbs. per ton = 0.91 per cent.

When the quantity of peat distilled during 24 hours was 9 tons, the produce of tar was only 2 lbs. per ton.

In the experiment by Dr. Hodges, which gave 4.44 per cent. of tar, the distillation of two tons of peat occupied three days, and the blowing machine employed in that experiment is described as having been "very inefficient," and furnishing only "an intermittent blast of no great power." The same fact is pointed out in Sir Robert Kane's report, as having been observed in the course of the investigation made at the Museum of Irish Industry by Mr. Sullivan. When much air was blown through the apparatus, scarcely any condensible products were obtained; when little air was blown through, the distillation was very slow and incomplete.

This result of a very small yield of tar when a strong blast was used appears to be clearly attributable to the peat having been burnt in the kiln, instead of having been distilled; and this view of the matter led me to the conclusion that it would be advantageous to dispense with the blast altogether, as being not only very expensive, but also useless and unsuitable for the production of tar. It appeared to me that a more appropriate means of maintaining the combustion of the charcoal at the lower part of the kiln, so as to produce the requisite heat for distilling the peat at the upper part, would be to have a fire-grate at the bottom of the kiln, and to establish a draught through the fire by exhaustion from the upper end of the kiln. It appeared to me, moreover, that by this means the escape of the tar vapor from the kilns would be facilitated in a much greater degree than by the blast driven into the kilns at the bottom.

This opinion was supported by the result of some experiments made with a small kiln, constructed in this manner, which was worked for some time in Lews. In this kiln the draught was produced by means of a chimney placed at the further end of the condenser, and the yield of tar obtained with this experimental kiln amounted to 5 per cent.

The tar thus produced differed somewhat from that obtained by distillation in close retorts chiefly in respect to the relative proportions of light and heavy oils and paraffin, as will be seen by the following results of the analysis of these two tars:

| Density. | Retort Tar. | Kiln Tar. |
|---|---|---|
| Light oil (0.820—0.830) | 18.678 | 5.147 |
| Heavy oil 0.870 | 20.165 | 30.885 |
| Paraffin | 3.318 | 5.135 |
| Creosote | 30.459 | 47.068 |
| Charcoal gas and waste | 27.380 | 11.765 |
| | 100.000 | 100.000 |

This difference might, however, be owing to defective condensation of the more volatile portions of the tar vapor, as the arrangements connected with the experimental kiln were in many respects very imperfect. Otherwise the tar was as easily worked as that obtained with close retorts, and the general result of the trials made with this kiln was so far favorable to this mode of working, that when arrangements were made for erecting works to make six tons of tar a week, it was determined to construct a range of kilns of this description, in preference to putting up retorts; at the same time it was hoped that with a more efficient arrangement for condensing the tar vapor, a larger yield of tar than 5 per cent. might be obtained.

These preliminary matters having been satisfactorily disposed of, preparations for erecting works were commenced in the early part of 1859. The tar kilns were cylindrical brick chambers 5 ft. diameter and 12 ft. high, with a fire-grate of about 2 ft. area at the lower end, and a hopper with a lid at the top for introducing the peat. Ten of these kilns were constructed side by side in a block of brick-work. From the side of each kiln passed a pipe 12 in. diameter, which was connected with a main 3 ft. diameter, extending round the whole range of kilns, and into which the tar vapor from the kilns was discharged. From this main the vapor passed into a series of pipes 12 in. diameter, arranged on cisterns, much in the same manner as the condensers of gas-works, but with the difference that there was no water-joint. After passing through this condenser the uncondensed gases were discharged into a brick chamber with numerous partition-walls, and thence into a large flue running for about fifty yards up the side of a hill, on the top of which was placed a chimney 30 ft. high.

A tramroad ran along the top of the kilns, communicating with the tramroads diverging through the moor, for bringing up the supplies of peat; and, as the peat burnt away at the fire-grates, a fresh quantity was introduced at the upper ends of the kilns. This charging required to be repeated every two or three hours. The product collecting in the condenser cisterns was a thick creamy mixture of tar and water, of a pale sulphur color, from which the tar was separated by heating it in a large boiler, and skimming the tar off the surface.

With this arrangement work was commenced about the end of August, 1860; but, owing to the wet state of the brick-work, and to a temproary difficulty with the work people, it was not until the early part of October that the kilns were got into regular working order. From that time the work was carried on without any considerable interruption until the end of February, 1861. The results obtained during this period were far from being satisfactory. In the first place, the tar made did not amount to more than 3 per cent. of the peat consumed; and, in the second place, the quantity of peat worked did not amount to more than 50 tons a week on the average.

The expenses of labor in working the kilns being very nearly same, whether the quantity of peat worked was large or small, the slow rate of working necessarily increased the cost of the products, and this circumstance has an influence as important in this respect as the yield of tar, as will be apparent from the comparison given in the annexed table:

| Percentage yield of Tar from Peat. | Quantity of Peat worked per week. | Tar produced. Tons. | Tar produced. Gallons. | Refined Oils and Paraffin. | Cost of Tar made. Peat 2s. per ton. | Labor. | Equal. | Cost of Tar per ton. | Cost of Tar equivalent to one gallon of Refined Oil. | Cost of Refining per gallon. | Cost of Refining Oil per gallon. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons | | | gals | £ | £ | £ | £ s. d. | s. d. | d. | £ s. d. |
| 5 | 50 | 2½ | 583 | 268 | 5 | 10 | 15 | 6 0 0 | 1 2⅝ | 6 | 0 1 8⅝ |
| 5 | 120 | 6 | 1398 | 642 | 12 | 10 | 22 | 3 13 6 | 0 9 | 6 | 1 3 0 |
| 5 | 200 | 10 | 2330 | 1070 | 20 | 10 | 30 | 3 0 0 | 0 7¾ | 6 | 0 1 1¾ |

Moreover, the rate of working was subject to wide variation. This latter circumstance, which was productive of much inconvenience, appeared to be mainly determined by the state of the wind. During calm weather the quantity of peat worked was not much more than half that worked when there was a fresh breeze. With a dead calm the action of the kilns would sometimes be entirely stopped, and during gales, which were of very frequent occurrence, it was impossible to continue working. The most troublesome effect of these two extreme conditions was the production of a back draught from the chimney, through the condenser, towards the kilns, by means of which air became mixed with the vapors and combustible gases; and, when this admixture reached a certain limit, ex-

plosions sometimes took place, which were both inconvenient and dangerous.

The slow rate of working which, as shown by the following table, rendered the charge for labor proportionately much greater, was, to a great extent, a consequence of the feeble and irregular draught produced by the chimney. In addition to this, the tar vapor did not appear to escape from the kilns through the 12 in. discharge pipes with sufficient ease. The consequence was, that much tar was condensed among the cold peat at the top of the kiln, and this tar, melting afterwards, ran down to the fire, and was there more or less burnt and destroyed. Hence the small yield of tar.

Since the feeble draught of the chimney was the chief cause of these unsatisfactory results, and since that was itself a consequence of the extreme refrigeration of the vapor and gas during its passage through the condenser, the defective draught might have been remedied by maintaining a fire at the base of the chimney, so as to heat the cold, uncondensed gas escaping from the coedenser, where the tar had been deposited, sufficiently to produce a steady draught; but, since the gas escaping into the chimney was highly combustible, this would have been too hazardous a plan to adopt, inasmuch as the weather was frequently so boisterous that it was with difficulty that work could be carried on at all out of doors; and, as the kilns were worked continuously, there would have been much inconvenience attending this mode of working during the very long nights of winter.

Under these circumstances, it appeared to me desirable to have recourse to some mechanical means of producing a draught, that would be constant in its action, easily under control, and which would admit of the gases discharged from the condenser being burnt with safety, by the introduction of a water-joint between the condenser and the place where they were burnt. A further reason for adopting an arrangement of this kind was the presence, in the uncondensible gases escaping from the condenser, of a large quantity of tar, which was suspended in a kind of vesicular position, and was not separable by any amount of cooling that was practically applicable. The smell produced by the escape of this tarry gas into the air was exceedingly offensive for miles around, and for this reason, as well as for the sake of using the gas as fuel, it was determined to burn it. Moreover, though the separation of this suspended tar could not be effected by cooling the gas, it was easily separated by mechanical means, such as passing the gas over loose bunches of heather. This plan has been adopted while working with the chimney draught, and, so far as the separation of the tar was concerned, it succeeded perfectly. A long brick chamber was connected with the flue leading to the chimney, so that the gases were made to pass along it in a zigzag course by coming in contact with bunches of heather tied to cords and suspended from the roof of the chamber. The effect of this arrangement in separating the suspended tar was instantly recognisable, the gases escaping from the chimney being almost free from tar. But the draught of the chimney gradually decreased, and at the end of two or three weeks had ceased altogether. On opening the chamber it was found to be entirely choked with tar that had been deposited upon the bunches of heather like drifts of snow. This circumstance suggested the introduction of several such chambers into the condenser, and it was also expected that the passage of the vapor and uncondensible gas through water would have a similar influence in separating this tar. But to overcome the resistance that would thus be offered to the passage of the vapor and gas from the kilns, it was necessary to have a very powerful draught; and, after considering the various means employed at gas-works for exhausting, I decided upon trying the effect of a revolving fan. A very excellent form of fan of great power was suggested for this purpose by Dr. Rankine, but, as time was a considerable object, one of the ready-made fans, manufactured under Schiele's patent, by the North Moor Foundry Company, was chosen for the trial.

*(To be continued.)*

---

Gas in France.—The Paris Company for lighting and heating by gas, at their annual meeting recently held, declared a dividend at the rate of 17 per cent. per annum. In 1862 the profits realized were $6,000,000.

## PETROLEUM ITEMS.

Fire in a Petroleum Refinery in Holland.—In the latter part of April, a fire broke out in a petroleum refinery and patent oil manufactory of Messrs. Fagot & Masion, in Dordrecht, Holland, caused by the sudden bursting of a patroleum cask. Fire-engines were soon upon the ground, and the fire was confined to the building in which it originated.

Petroleum in South America.—Intelligence from the River Platte, in South America, has been received to the effect that a petroleum spring has lately been discovered in the province of Rioga, belonging to the Argentine confederation. Scientific men pronounce that country as rich in that singular product as Pennsylvania. The great drawback there is a scarcity of workmen.

Oil Boring.—The Oil Springs *Chronicle* thus refers to the prospect of the season in that locality:

Now that crude oil commands a price somewhat near its value, the question of increased production is receiving its due share of attention. Various new wells are in course of drilling, and the recent good fortune of Messrs. Pope & Penton in obtaining an excellent well in the direction of the "Gum-Beds," has given a new impetus to the drills in that locality; nor has it served to dissipate the opinion that in the gum-bed region the best wells will be obtained. The season, too, is now close at hand when there will undoubtedly be demand, at most remunerative prices, for all the crude oil that can be produced in Enniskillen, and as the increase of demand is now, and is likely to continue, greater than the increase of production, we may never look for such fluctuations and drawbacks as the producers have experienced the past twelve months. In view of these facts, many who heretofore could not find encouragement to risk their capital in putting down oil wells, are now turning their attention to this branch, which so far has proved the most lucrative by double that of refining. The extent of the oil-bearing territory here is so unlimited, that but a fractional part is yet developed.

The Oil Wells Company of Canada.—The Oil Springs *Chronicle* says that the agent of this company is busily engaged in preparing for business. He has commenced the investigation of certain oil lands in the Enniskillen district, with a view to purchase those which may be of any value. The following extract from the *Chronicle* gives some particulars relative to the objects of the company:

The capital of the company is £75,000. The object of the company appears to be not only to purchase certain oil lands, but also to reduce the charges of freight and conveyance, of both crude and refined oil, to the London markets from Canada and Pennsylvania. The Company has established near London, outside the petroleum district, storehouses where ships may unload at a mere nominal charge, to make advances and charge a small interest for the time the advances are made, and also a low rental per barrel during the time the oil is held. We are informed several refiners in this place have already entertained the employment of the agency of this truly valuable assistance to our refiners. The Company also propose to establish agencies for the sale of oil in both large and small quantities throughout Great Britain and the entire continent of Europe. By this plan, at an almost nominal charge, the refiners will be enabled to keep their oil in Europe until the market offers inducements to allow the sale at a profit. The present mode of sending to brokers, obtaining advances for a short period, together with the enormous charges, have almost rendered the supply of oil to Europe a total loss. Mr. Schaller, the agent, is most likely known to nearly all our refiners, though until a very short time since the object of his visit has been kept so profound a secret, that his long stay and numerous inquiries as to the supply of the crude material, the charges on refined oil and amount of produce, has caused some remarks as to what might be the nature of his investigations or the cause of so long a stay of a stranger with us. We are sure Mr. Schaller has obtained by this means much valuable information, and we are informed intends to carry out the proposed plans, which will certainly be a great benefit to all those interested in the oil districts.

The agent of the Oil Wells Company has for the last two days received the assistance of Mr. Robb, a well-known geologist of Montreal, and they are now actively employed in their investigations of the district.

Rebel Raid on the Oil Wells.—A recent despatch from Pittsburg has the following information:—"The rebels have made a raid to Burning Springs Oil Wells, and destroyed the wells. They burned the boats and destroyed a large quantity of oil springs on the Kanawha river, thirty miles from Parkersburg, in Wirt County, ten miles from the Baltimore and Ohio Railroad. Pittsburg parties have suffered severely."

Petroleum in Germany.—Large quantities of petroleum are now constantly forwarded to the interior of Germany by the railroads; but as there is some danger connected with its conveyance, the Association of North German Railway Companies have issued special regulations for the transport of petroleum, binding on them all. The principal conditions insisted on are the following: "The traffic to be exclusively confined to refined petroleum; crude being totally excluded. The casks to be immediately examined when brought to the station, and not to be received unless in irreproacably good condition. Refined petroleum not permitted to be loaded, unloaded, or stored in the goods-sheds, but only at a place at a safe distance, and in the open air, fixed on at each station by the respective station-masters. The petroleum not to be conveyed in the covered vans with other goods, but placed in separate open trucks, simply covered by a tarpaulin. The loading and unloading to be performed exclusively by daylight, and no smoking permitted by the men employed, under any circumstances, in the neighborhood of the casks. No lamps or lanthorns to be attached to the petroleum trucks at night when in motion. On each side of the truck a red board to be displayed, on which to be painted in conspicuous letters the words, 'Petroleum, dangerous.' Petroleum only to be forwarded by goods trains. The trucks to be placed in the middle of the train, as at night lamps are attached to the last carriage, so as to be visible from behind. The minimum quantity is fixed at 50 centimers. If less, full freight for the above quantity to be charged."—*Grocer.*

---

Home-made Gas.—A company has been formed under the Limited Liability Act, entitled the British and Foreign Gas Generating Apparatus Company. In the list of directors are the names of some practical business men, a fact which may in some measure be accepted as a guarantee of the genuine nature of the concern. The promoters have for their object the introduction of such improvements in the construction of gas generating apparatus as will enable individuals to make gas for their own consumption, and this upon a system which is said to be more economical than that of purchasing from companies holding a monopoly. As we have made it a rule in the conducting of this Journal always to steer clear of any subject foreign to our calling, it may be well to mention that our only excuse for attempting to meddle with the business of this company of gas engineers, is the discovery of a novel feature they propose to introduce into the operations. It appears that they have secured a patent for distilling gas from resins, refuse of fats, oil, and animal or vegetable matter, by a process "so simple that it can be entrusted to a country lad." We quote from the prospectus, and should their idea come into operation it will no doubt increase the demand for the cheaper and inferior descriptions of oils and fats. The apparatus occupies but a very moderate space, and is either made fixed or portable, as required; adapted for supplying villages, factories, workshops, and private dwellings. The gas produced by this process is said to be of a very superior quality, each burner affording a light equal to sixteen sperm candles, and, it is stated, at a cost of much less than a farthing per hour without smoke or disagreeable odor.—*English Paper.*

---

Rochester, N. Y.—We are informed that the Rochester Gas Company have resolved to raise the price of gas from $2 50 to $3 per thousand cubic feet. This increase in price is brought about by the enhanced cost of coal, iron, labor, and of nearly all other articles used in the manufacture of gas.

THE AMERICAN GAS-LIGHT JOURNAL is published on the 1st and 15th of every month, and is the recognized official organ of

LIGHT, HEAT, WATER-SUPPLY AND SEWERAGE.

Its purpose is to ascertain and make known all new discoveries in the science and economical application of LIGHT, and promote thereby the interests of companies and consumers; to encourage and aid the introduction of PURE WATER from Lakes and Rivers into Towns and Cities, and to improve the system of SEWERAGE, VENTILATION, HEATING, and DRAINAGE everywhere.

THERE ARE 20,000 CITIES AND TOWNS IN THE UNITED STATES, CAPABLE OF SUPPORTING GAS-WORKS, WHILE THERE ARE NOT 400 GAS-WORKS IN OPERATION IN THE WHOLE COUNTRY!!!

TERMS—CASH IN ADVANCE.

SUBSCRIPTION—In the U. S. and British Provinces, $3 per annum. In Great Britain, 12s. per annum, payable in British post-office orders, remitted to the Editor, as below.

ADVERTISEMENTS—According to position and space occupied.

☞ Remittances by mail to be addressed to the Editor,

C ELTON BUCK,

ROOMS of the AMERICAN GAS-LIGHT JOURNAL,

No. 39 Nassau st., cor. of Liberty st., opposite the Post-Office. New York City.

*AGENTS OF THE AMERICAN GAS-LIGHT JOURNAL*

FOREIGN.

*Germany* .....B. WESTERMAN & Co., of New York.

*Great Britain*....TRUBNER & Co., 60 Paternoster Row, London, where single copies may always be found,

*Paris, France*. . } LE JOURNAL DE L'ECLAIRAGE AU GAZ, 25 Boulevard Poissonnière.

DOMESTIC.

V. HAROLD MYERS, No. 152 South Fourth st., Philadelphia.

The AMERICAN GAS-LIGHT JOURNAL can be purchased of all the newspaper and periodical dealers in the U. States and Canadas.

THE

# AMERICAN GAS-LIGHT JOURNAL,

PUBLISHED ON 1ST AND 15TH OF EVERY MONTH.

C. ELTON BUCK, . . . . . EDITOR.

MONDAY, JUNE 1, 1863.

The Dundas *Banner*, a Canadian newspaper, thus speaks of the prospects of petroleum gas in that town. As this question still occupies the thoughts of many gas engineers—although the great majority of them have long since quite made up their minds on the subject—it is well to occasionally ventilate th matter, and to collect the opinions of both the advocates and opponents of petroleum-gas. We quote from the *Banner* as follows:

"The 'New Dundas Gas-Light Company' have completed their arrangements for furnishing the town with their superior gas-light, manufactured under Mr. THOMPSON'S process from petroleum. For some weeks past we have observed that newspapers in the the interest of Coal-Gas Companies have been endeavoring to detract from the merits of Mr. THOMPSON'S system of manufacturing gas, but we are happy to say that so far as our experience goes, we find that gas manufactured from petroleum is not only far cheaper than coal-gas, but affords a much clearer and better light, with less consumption of gas. The fact that JOSEPH WRIGHT, Esq., of the Dundas Cotton Works, has had Mr. THOMPSON'S petroleum-gas process in operation successfully for the past six months, and that he has found it to work to his entire satisfaction, sets aside at once the one-sided and unfounded assertions which have been made with reference to petroleum gas. We believe it is the intention of the new company to furnish gas at from $2.50 to $3 per thousand feet, which we are credibly informed will be cheaper than coal-gas at $1 per thousand, as the light will be found to be much superior with a much less consumption of gas. It is the intention of the managers to furnish all parties with the gas at a rate which cannot fail to secure its universal adoption by every householder in town, as it will be found to be cheaper than any other light that can be procured. We may mention that as Mr. THOMPSON'S process has been so successful in Dundas, and as the pipes extend over three miles in town, it is now proved beyond a doubt that gas manufactured from petroleum must eventually supersede coal-gas everywhere, and that it can be successfully worked on a large as well as on a small scale."

We shall be glad to hear of the success of Mr. THOMPSON'S process, but think that in order to obtain complete results, he must have somewhat varied his original plans. The remark of the *Banner* that "newspapers in the interest of coal-gas companies have been endeavoring to detract from the merits of Mr. THOMPSON'S system of manufacturing gas," is not only foolish, but very wide of the truth. Coal-gas companies have not the slightest objection to the adoption of petroleum-gas. Prove to them that it is their interest to use petroleum instead of coal—that it is cheaper—and they will not hesitate long in making a choice. The assertion that "it is now proved beyond a doubt that gas manufactured from petroleum must eventually supersede coal-gas everywhere," is sufficient to show the writer's ignorance of gas matters, and is but an example of those ridiculous asseverations which thoughtless scribblers so frequently put before public, and it is worthy of about as much credence as Mr. SEWARD'S "ninety days'" predictions of the overthrow of the Southern rebellion.

If petroleum-gas is destined eventually to "supersede coal-gas everywhere," why have the Canadian gas companies not found this out and substituted it in their works? Crude petroleum may be bought in Canada for a mere song, in comparison with coal, and yet very few companies use it. The loss of business which many of these gas companies feel, owing to their former consumers having adopted coal-oil lamps, is in many places enormous. This we should suppose, would be a sufficient incentive to induce gas companies to carbonize petroleum in place of coal—provided it be proved to their interest to do so. That they have not done so—except in a few instances—shows rather conclusively that their decision is in favor of coal, and this decision is supported by the concurrent testimony of nearly every thorough gas-engineer who has impartially looked into the subject. For instance, we refer our readers to the report of the New City Gas Company of Montreal, C. E., published on page 292 of this volume, in which it is stated, that after a thorough examination of the subject, by a committee of five directors, the conclusion was reached that—"whatever facilities may exist for making gas from petroleum on a small scale, very serious difficulties would have to be encountered before it could be made available for the lighting of large cities; *the cost, also, of production, having been found to exceed that of gas from coal,* they consider that the advantages are all on the side of the company continuing the use of the latter for the manufacture of gas for illuminating purposes."

This evidence is very stong, and comes from a responsible source. It is clear and business like, and to the point. It accords with the testimony of many other companies, and is quite conclusive. But as far as small towns are concerned, the case is somewhat different, although we believe that even in these instances, coal, in the long run, is cheaper than petroleum. It certainly is, in the vicinity of coal fields, where the price for coal is low. But away from localities where coal can be bought at low prices, and in the vicinity of oil-wells, in some instances petroleum may be profitably employed—just as certain gas companies formerly preferred rosin to coal. In carbonizing petroleum in a small way, it is true there are some things to be said in its favor. Gas is evolved more rapidly than from coal, and the expenditure of fuel is less, as the heats may be permitted to run down for several hours in a day—or but one bench may do the work of two or more coal benches. But even here there are drawbacks. No coke resulting from the carbonization of petroleum, fuel must be purchased, and this is not only a source of trouble but expense. Then, too, the liability of petroleum-gas to condense in the pipes and fittings is a very serious objection, which we have mentioned before. So that, all things being considered, we must pronounce decidedly in favor of coal, although—as there are exceptions to every rule—so there may be circumstances under which petroleum may be better adapted for yielding gas than coal. These exceptions, however, we believe to be like angels' visits, few and far between. We hope if successful Mr. THOMPSON will send us a statement of his progress in lighting Dundas. If not successful—"the least said, the soonest mended."

As this subject should receive a through ventilation, we invite engineers and others who have experimented on a working scale to send us the results of their labors.

## PETROLEUM ORDINANCES.

Although there are some persons who habitually carp at any legal restrictions imposed upon traffic, no matter for what reason such statutes may be enforced, still there are but few who will not acknowledge the necessity of establishing ordinances for the protection of life and property, and for the regulation of certain branches of trade. The danger resulting from the promiscuous storage of hazardous materials in crowded communities is apparent to all; and the necessity of some legislation to remove the cause of disastrous conflagrations will be admitted even by those whose interests might prompt them to desire perfect freedom from all legal restrictions. In large commercial cities these ordinances are particularly important, and the prosperity of a whole community may in a great measure depend upon their proper construction and enforcement.

Experience is a teacher whose lessons are generally illustrated in the most practical manner, and by these teachings the importance of special laws to regulate trade in certain articles of a dangerous character, has been fully shown. The disastrous fires which have resulted from large bodies of inflammable substances being stored in buildings totally inadequate for the purpose, and the losses caused by explosions of steam-boilers, of gunpowder, and other substances, and more recently of the subtile vapors of petroleum and kindred liquids, have caused a degree of insecurity to be felt, and the nervous apprehensions of the public have been excited to an unwonted degree. This state of feeling is perfectly natural, and it is not singular that demands should be made for restrictive laws to regulate the trade in such articles as may prove dangerous. But as this conviction of danger is usually brought about by some recent disaster, the effect of which is characterized by as great an excitement after the occurrence, as of apathy before, the demands of the public often run to excess, and an unnecessary and injurious stringency is frequently resorted to, of which there is not a particle of necessity. The result of this is that ordinances are enforced which not only injure individual dealers, but cause the prosperity of a whole locality to decline, as has been observed in many instances.

On the subject of the danger of petroleum and its storage there has been felt a great deal of unnecessary alarm. We do not by any means attempt to deny that much danger attends some departments of the business; but that an unfounded idea of the character of petroleum, and a magnified notion of its hazardous nature does exist, there is not the shadow of a doubt. These misguided opinions have seriously hampered business in many places, and while obstructing the legitimate traffic of responsible houses in some cities, they have been the means of diverting trade from its legitimate channels, and of perverting the minds of the people to a highly colored idea of danger, where in reality little exists where proper precautions are observed.

On another page we publish an ordinance recently adopted by the city of Boston, Mass., followed by the comments of SAMUEL DOWNER, Esq., the President of the Downer Kerosene Oil Company. Mr. DOWNER is one of the veterans of the oil manufacture in this country, and it was a wise piece of forethought which induced the Boston City Council to obtain the matured opinion of so competent a judge upon the subject. We hope that other cities will profit by the example of the authorities of Boston, and so draft any ordinances they may be called upon to pass, as to effect the benefit desired, without inflicting an injury upon an important branch of industry. The authorities of Boston seem to have an intuitive faculty of befriending commerce, and at the same time of protecting the public. By the foolish enactments of New York, the saltpetre trade has been almost entirely driven away from this city, while in Boston, where no such prohibitory statute is in force, the trade in this staple article of import annually amounts to millions of dollars.

## FINANCIAL.

*Saturday Evening*, May 30, 1863.

There has been an increased demand for gas stocks since our last issue, though prices do not reach the extreme figures noted then.

The principal demand at present in for *Hartford*, Ct., *Chicago*, Ills., *Metropolitan*, N. Y. City, *Poughkeepsie*, N. Y., and *Brooklyn*, N. Y.

These stocks are wanted for permanent investment by capitalists who consider them superior to any other security.

Money continues very abundant, which fact will soon operate in raising the value of shares in companies less known than those indicated above.

Among the stocks now on the market may be mentioned the following: *Evansville*, Ind.—an 8 per cent. stock. The company's affairs are well managed, and their prospects are said to be highly encouraging. *Augusta and Hallowell*, Me. These two towns are lighted by one company, and the stock is firmly held. We also notice parcels of *Ithaca*, N. Y., *Burlington*, Vt, *Geneva*, N. Y., *Ogdensburgh*, N. Y., and a few shares of the *Buffalo Water Company*. *Terre Haute*, Ind., gas stock is also offered. This ought to be a good concern, but we have had no direct information concerning its condition for some time.

One of the principal shareholders in the *Salem*, O., Gas-Light Company wishes to part with his interest in the same, and offers inducements in the way of the control of the company. Capitalists residing in that part of the country may find this stock worth some attention. A full examination of the books of the company is offered to any parties desiring to purchase.

Regarding the value of New York City, and Brooklyn, N. Y., gas shares, we notice not much change. *Citizens'* stock has, during the past fortnight, receded a shade from our last quotations, but this was owing to sympathy with the decline in the general share list.

The prospects of the *Cold Spring*, N. Y., Gas Company are regarded as very encouraging. In our last we mentioned that a portion of this stock was offered. The last balance-sheet of the company presents a very favorable report of their standing, and shows a steady increase in consumption. This company light the West Point Foundry, which has heavy contracts for government work, and employs a large force, running both night and day. The Cold Spring works formerly supplied rosin gas at $6 per thousand cubic feet. They were recently altered into coal gas works, and have reduced their price to $4 per thousand, which will have the effect of inducing an increased private consumption.

---

Odorous Monopolies.—Nearly every evening the residents of the central and upper portions of this city are regaled with a succession of abominable smells which remind one of anything but

"Sabean odors, from
The spicy groves of Araby the blest."

For more than a year past have these effluvia offended the nostrils of our goodly citizens, and always at about the same time in the evening—lasting for an hour after sundown. We have noticed them as low down as Tenth street, and as high up as the top of Murray Hill, extending the whole breadth of the city. Whatever they are, or wherever they come from, they are a nuisance, and ought to be stopped forthwith. The odor is at once recognizable as the stench proceeding from a gas-purifying house, and the honor of producing it clearly lays between the New York and Manhattan Gas Companies. One or the other of them is responsible. As the people have endured this nuisance for more than a year, pray, Mr. Delavan, will you not hold up the terrors of the law before these "*odorous* monopolies," and teach them that however arbitrary they may be on the subject of light, they have no business to offend the olfactory nerves of those, whose optics are so completely under their control? A few words from you may be of some avail.

## ANSWERS TO CORRESPONDENTS.

J. E., of Ky.—*The parties you refer to have retired from business, and left the country. We presume they have returned to England, from which country they hailed.*

C. A. B., of N. J.—*The quantity of gas made from crude petroleum is stated at very different figures by different experimenters. Our correspondent "An Advocate of Coal-Gas" is confident that when the gas is properly condensed and purified, not more than 60 cubic feet to the gallon can be produced. Others, speaking with equal confidence, claim to have made upwards of 100 feet to the gallon. We incline to the belief that our correspondent's views are in the main correct.*

O. M. W., of Mich.—*From the description you give of the coal, we should hardly think it well adapted for making gas. It does not contain enough bituminous matter, and although gas of an inferior quality can be produced from it, it will not compare with other American coals as a gas yielding material.*

E. C. T., of Conn.—*The pamphlets have been received, for which we tender our acknowledgments. The specimens are well illustrated, and the drawings beautifully executed. We can speak in unqualified terms of admiration for the whole performance.*

A. & L., of N. Y.—*Owing to the high rate of exchange on London the work will cost you a very heavy advance on its publication price. Yet it is well worth the money, for the information it gives is almost inexhaustible.*

B. B. T., of C. W.—*We regret to hear of the condition of your company, and hope the future may have much brighter prospects in store for you.*

A. McD., of Pa.—*A long time has elapsed since the charter was obtained, and yet no attempt has been made to build the works. We presume that other business has occupied the attention of the promoters of the scheme.*

---

Our Tables of the Gas-Light Companies.—Officers of gas companies will do us a great favor by examining our tables and pointing out any errors which may appear. In tables embracing a scope so wide as those we publish, it is of course impossible to always avoid making some mistakes. Few persons can form any idea of the expenditure of time, labor, and money involved in the preparation of these tables, or the immense amount of correspondence which their compilation necessitated. We hope to be notified of any errors which may have been made, and we will take pleasure in correcting them, for we desire to make the tables perfect.

---

Philadelphia, Pa.—The people of Kensington, Philadelphia, who have for several years past made many complaints on account of the bad quality of the water supplied to them, which is pumped from the Delaware river, have again had reason to lay their grievances before the Water Department of that city. The Chief Engineer, Isaac S. Cassin, Esq., has lately given his attention to the matter, and in a report which he has just made, he says—"The Delaware water is entirely unfit for domestic purposes, and the quantities of impure and objectionable matter are constantly increasing; that the health, and even the life of the people is endangered by its use, and that there is the most urgent necessity for the early adoption of measures of a permanent character, looking to the discontinuance of the use of water from the Delaware river."

When it is remembered that all, or nearly all, the sewers of Philadelphia, with the refuse matter of a population of 650,000 inhabitants, flow into the Delaware, a very short distance from the Kensington water works, it is not surprising that the health of the people should suffer. The water they drink contains poison; and sooner or later, if its use be persisted in, it will breed pestilence and death.

---

American Lamp Burners in England.—The London *Ironmonger* alludes to certain samples of American lamp burners, designed particularly for petroleum and coal-oil lamps. Immense quantities of these American lamps and burners find their way not only to England, but also to France, Germany, Belgium, Holland, and many other continental states. Among the houses most largely engaged in the export trade are Messrs. Dietz & Co. of this city, and Messrs. Van Kirk & Co. of Philadelphia.

---

Water-Rents of Philadelphia.—The water-rents paid by the citizens of Philadelphia amount to $400,000 per annum.

## IMPORTANT INVENTION FOR PETROLEUM DEALERS.

We have recently examined an invention which may prove of some importance to dealers and shippers of crude petroleum. It consists of a car, constructed of two iron cylinders, of nearly the diameter of the wheels, which are slipped over the heads of the cylinders, and securely riveted to the same. When the wheels revolve, the cylinders move with them, and the motion of the whole car is precisely analagous to that of two barrels connected by a light frame-work, and rolled on a skid. In the centre of each cylinder is placed a partition the whole length and depth of the same. On the head of each cylinder is placed the journal, which rests on and works in boxes placed underneath the frame, and are thus connected together.

The special use for which this car is adapted, is the transportation in bulk of petroleum from the wells to shipboard, entirely obviating the necessity of using barrels, thus saving the enormous items of their first cost, handling, cooperage, and return freight for empty barrels—a very heavy expense which all dealers are now put to. Besides this, the leakage which now ensues from barrels amounts to a very large waste. This, it is believed, will be almost entirely saved by the adoption of the rotary car.

Another and very important item is the almost entire absence of friction, by placing the weight immediately on the track, and not on a truck. The friction is thus reduced to a minimum, and locomotives are enabled to draw a much heavier load than when the ordinary truck-car is used.

A model of this car can be seen at the office of Mr. C. Tiers Myers, No. 67 Liberty street, in this city. Petroleum shippers will find it to their interest to give it a thorough examination.

---

New Turbine.—An improved turbine, says the London *Builder*, has been provisionally specified by Professor Charles Fink, of Berlin, Prussia, which is constructed with a fixed outer ring of adjustable direction vanes, contained between two parallel horizontal annular surfaces, between which adjustable vanes the actuating water passes, and is directed by them into and through a series of buckets or openings formed with or attached to a ring or wheel attached to a shaft or spindle, and free to revolve within the ring first mentioned. The actuating water, after passing through the buckets of the inner ring or wheel (and thereby giving a rotary motion to the same, and to the shaft or spindle upon which it is fixed), passes downward through a suitably formed pipe or tube, from which it is ultimately led away in any convenient manner. The necessary movement for adjusting the vanes to any required angle may be imparted to the annular ring by levers or other convenient or suitable means.

---

Water Supply of Paris.—Among the numerous advantages bestowed on the inhabitants of Paris within the last few years, is to be reckoned a good supply of pure water. Paris now receives, from various sources, a volume of water equal to 153,000 cubic metres daily, of which the canal of Oureq supplies 105,000 cubic metres. This water is distributed by means of 20,948 metres of pipes for the supply of houses, and of 754,852 metres of pipes for the supply of the public, of which the diameter of the largest is not less than one metre, ten centimetres. Two steam-pumps are being constructed on the Quai d'Austerlitz, of 100 horse power each, which will increase the present supply of water by from 12,000 to 15,000 cubic metres the day. Taking the present daily supply of 153,000 cubic metres, this is equal to 33,660,000 gallons, equal to about 20 gallons per head of the present population of Paris within the fortifications.

---

Fire from Spontaneous Combustion.—The conflagration of Allen Hay & Co.'s large soap and candle works, which occurred in this city on the 25th of April last, took place from spontaneous combustion. A lot of candle-wicks which had been extracted by melting broken candles, had been packed before the oleaginous matter had been fully extracted by pressure. The total loss by this conflagration amounted to about $165,000, which was insured only to the amount of $75,000, leaving a clear loss of $90,000.

## WATER-WORKS OF AMERICA.

### HARTFORD, CONN.

The report of the Water Commissioners of Hartford, Conn., for the year ending February 28th, 1863, represents the Works and the state of the company to be prosperous, and steadily increasing in all that conduces to a sound financial condition. The excess of receipts from water-rents over all expenses other than for new extensions and construction account, being three thousand two hundred and thirty-eight dollars and sixty-eight cents ($3,238 68.)

This result of receipts over expenses was, for the first time, reached the previous year, when this excess was shown to have been one thousand thirty-one dollars sixty-five cents; and the excess for the present year was then estimated by the Commissioners at the sum of two thousand eight hundred and twenty-nine dollars. It will be, therefore seen that the realized excess for the year has exceeded that estimate in the sum of four hundred and nine dollars sixty-eight cents.

| | | |
|---|---|---|
| The total receipts for water-rents alone, for the past year, have been | | 36,685 02 |
| For extra per cent. on delinquents | 314 90 | |
| For last year's arrears collected | 110 98 | |
| | | 425 88 |
| Total receipts for the year | | 37,010 90 |
| The expenses have been as follows: | | |
| For pumping | $5,777 17 | |
| For salaries, repairs, &c | 5,371 38 | |
| For interest on water-fund | 22,500 00 | |
| For interest on temporary loans | 123 67 | |
| | | 33,772 22 |
| Surplus receipts over expenses | | 3,238 68 |
| The expenditure for new extensions of main-pipe and construction account have been as follows, viz.: | | |
| For new mains, hydrants, and stop-cocks | | 8,228 76 |
| For service-pipe | | 2,224 15 |
| Total | | $10,452 91 |

### NEW EXTENSIONS.

During the year there has been laid of new extension main-pipe 8,609 feet, or nearly 1¾ miles, with ten new hydrants and seventeen stop-cocks connected therewith. One hundred and eighty-one service pipes have been laid the past year. The entire extent of main pipe now laid and in use, including the above additions, is one hundred and sixty-two thousand one hundred and seventy-nine feet, or 30¾ miles very nearly. Connected therewith, there are one hundred and fifty-nine hydrants, one hundred and ninety-seven stop-cocks, and twenty-two hundred and eighty-three service-pipes.

The mains laid the past year have been iron, and chiefly coated, both inside and out, with a preparation of coal-tar varnish, patented by Doctor Smith, which is found by the experience of some other cities to afford a very secure protection against oxidation, and the formation of interior tubercles so common and injurious to iron pipe. This coating is applied at an expense of one dollar per gross ton of pipe, and if it accomplishes the purposes claimed for it, will prove of great benefit in proportion to its cost.

The Commissioners are, however, strongly impressed with the belief that the wrought-iron and cement pipe will be found superior and preferable, in most cases, to iron; and they would have used it for extensions during the past year, but for the fact that the immediate demands for water were so pressing that no sufficient time could be allowed for the cement to harden before use, which is an essential requisite in this pipe. The line of cement main laid in Wethersfield avenue has thus far been unsually free from leaks, or any necessity of repairs, and is decidedly a purer and more durable water conveyer than iron.

### QUANTITY OF WATER.

The quantity of water supplied to the city during the year, as registered at the pump-house, amounts in the aggregate, in gallons, to 491,644,749; an increase over last year of 90,564,412. The average daily supply has been 1,346,971; a daily increase over last year of 248,121.

### RUNNING TIME OF ENGINE.

The entire running time of the engine and pumps has been, in hours, 5,342 1-6 Average daily running time, allowing six days a week, 17 7-100; increase over last year, daily, 8.

The daily increase of the running time of the engine shows that the present means of supplying the city with water is coming up rapidly to its maximum capacity. In fact, during portions of the year it has been found necessary to keep it up to the full measure of its duty, constantly night and day; for with the limited reservoir, it is impossible to store any supply in advance of these periods of greater demand. Another year, with the same ratio of increased comsumption, will make the inadequacy of the present means of supply, during some portions of the year, more sensibly felt.

The Commissioners state that they cannot perceive how this prospective deficiency is to be avoided by any degree of vigilance on their part, in guarding against waste. This matter has already received and is constantly receiving their most careful and watchful attention and supervision, and with gratifying results, as they are happy in being enabled to show—the loss from this source being less than that of most other cities similarly supplied.

### RATE OF CONSUMPTION.

From the best data in the office, it is estimated that water is now being supplied to a population of about 26,000 persons, giving to each, adult or child, a daily average of fifty-one gallons, an enormous quantity seemingly, but which falls far below the daily average to each person in many other cities, and compares favorably with the general daily average of all. And the quantity of water stated herein as having been supplied, is the quantity as indicated by the register at the pumping-house, but owing to the material enlargement of the pump-cylinders by friction, and the consequent impossibility of close packing the pistons, it is true that the quantity now registered is materially greater than the quantity actually delivered into the reservoir. This disparity between the registered and the real quantity supplied, must necessarily become more and more apparent, the longer the pumps are compelled to labor in this condition, and it is utterly impracticable to suspend their operation long enough for any material repairs without stopping, for the time, the entire city supply.

### ADDITIONAL SUPPLY NEEDED.

The imperative necessity of providing for an additional supply of water from some source, has been often and urgently pressed upon the attention of the Common Council, by the Board of Water Commissioners. The vital consequences of any derangement or failure of the present machinery, to which all such works are liable, coupled with the fact that it is already burdened with nearly a constant duty up to the measure of its capacity, and that it is bearing this burden under the accumulating disadvantages of age and wear, are additional arguments in favor of an early extension, and a large additional supply.

In regard to the source and means of such additional supply, the Board refrain from any expression of opinion, and submit the subject entirely to the judgment of the Common Council. But whatever plan is adopted, whether by gravitation or by pumping, it will be absolutely essential, in order to supply the higher portions of the city, to provide for a much more elevated reservoir head. An additional supply merely, without an additional head, would fail to meet the necessities of the case.

### EFFECT OF NEW RULES AND RATES.

The recent ordinance of the city relative to this department, and the rules and regulations adopted at the time by this Board, with the approval of the Common Council, have been now in operation for nearly a year, and are found practically well adapted to their design, and salutary and efficient in effect. At the time of their adoption their was also a general revision of the water-rates, with a view to greater equity solely, and not with any purpose of either enhancing or diminishing the amount of such rates in the aggregate. The experience of the year shows that the object aimed at in the revision has been happily accomplished; and that, while the gross income has not been sensibly affected, far greater equity is attained in individual cases. And it is a peculiarly gratifying fact, that of the whole assessments for water-rents the past year there only remains outstanding and uncollected the sum of four dollars and forty-nine cents.

EXHIBIT OF ENGINE DUTY DURING THE PAST YEAR.

| Months. | Running Time Hours. | Running Time Minutes. | Number of Revolutions of Cam Shaft. | Total pounds of Coal consumed. | Gallons of Water delivered into Reservoir. | Ave. No. of Galls. delivered into Reservoir for each lb. of Coal consumed. | Average No. of Gallons Consumed per day. | Average No. of Gallons Consumed every day in the year. |
|---|---|---|---|---|---|---|---|---|
| 1862. | | | | | | | | |
| Mar. | 419 | | 249,875 | 72,600 | 38,105,937 | 524 | 1,229,223 | |
| April | 396 | | 237,194 | 65,100 | 36,172,085 | 555 | 1,205,736 | |
| May. | 427 | 30 | 252,506 | 70,500 | 38,507,165 | 546 | 1,242,166 | |
| June. | 412 | 30 | 244,675 | 68,000 | 37,312,937 | 548 | 1,243,764 | |
| July. | 472 | | 278,757 | 79,400 | 42,510,442 | 535 | 1,371,304 | |
| Aug. | 585 | 15 | 315,210 | 83,700 | 48,069,525 | 574 | 1,550,629 | |
| Sept.. | 458 | 30 | 271,543 | 76,400 | 41,408,782 | 542 | 1,380,292 | |
| Oct.. | 507 | 55 | 300,013 | 86,000 | 45,751,982 | 531 | 1,475,870 | |
| Nov.. | 443 | 15 | 263,424 | 75,900 | 40,172,160 | 529 | 1,339 072 | |
| Dec . | 439 | | 319,596 | 93 200 | 48,738,390 | 522 | 1,572,206 | |
| 1863. | | | | | | | | |
| Jan . | 441 | 45 | 259,364 | 79,500 | 39,558,010 | 497 | 1,275,903 | |
| Feb. . | 389 | 30 | 231,758 | 73,100 | 35 342,332 | 483 | 1,262,226 | |
| | 5342 | 10 | 3,223,900 | 923,400 | 491,644,747 | 532 | | 1,346.971 |

The tabular statement below shows the annual increase of the consumption of water, the corresponding engine duty, the total annual receipts for water, the contingent expenses, and the average amount received for each one hundred gallons of water, for each respective year, from the commencement:

| | For 1856. | For 1857. | For 1858. | For 1859. | For 1860. | For 1861. | For 1862. |
|---|---|---|---|---|---|---|---|
| Running time of engine. Hours. | 1291 | 1269 | 1518 | 1205 | 1273 | 1169 | 1342 |
| Running time of engine. Minutes. | 50 | 35 | 50 | 30 | 11 | 30 | 10 |
| Total pounds coal consumed. | 382,944 | 376,000 | 489,624 | 382,252 | 389,966 | 377,180 | 423,600 |
| Gallons of Water delivered into Reservoir. | 104,914,959 | 100,956,203 | 129,254,574 | 98,648,604 | 98,114,801 | 90,080,335 | 111,000,850 |
| Average Number of Gallons consumed per day. | 345,114 | 321,797 | 661,245 | 785,388 | 897,095 | 741,488 | 1,098,850 |
| Total Receipts for Water-Rents. | $17,699 09 | 16,112 07 | 21,821,75 | 26,000 51 | 30,088 44 | 33,259 06 | $37,010 90 |
| Current Expenses, including Interest. | $18,946 72 | 25,570 85 | 29,385 56 | 30,271 80 | 31,196 73 | 32,227 41 | $33,772 22 |
| Average Revenue for each 100 Gallons of Water in Mills. | 6.7 | 8.4 | 9.2 | 9.9 | 9.1 | 8.9 | 7.5 |

BOARD OF WATER COMMISSIONERS OF HARTFORD.

HIRAM BISSEL,
SETH E. MARSH,
N. H. MORGAN,
D. CRARY, M. D.,
ELISHA T. SMITH.

The following rates for the use of water were adopted in May, 1862, and are now enforced at Hartford:

#### FAMILIES.

1. For each tenement with inside fixtures, occupied by one family not exceeding five persons, $5; for each additional person, $1.

2. For each tenement occupied by two families or any number of separate occupants, not exceeding five persons, $7; exceeding five and not exceeding eight persons, $8; for each additional person, $1.

3. For each tenement occupied by three families or any number of separate occupants, not exceeding ten persons, $10; for any greater number of families or separate occupants, such rate as may be fixed by the Commissioners.

4. Families not exceeding eight persons, supplied from outside hydrants, $5; for each additional person, 50 cents, or less at the discretion of the Commissioners.

#### BOARDING-HOUSES.

5. Minimum rate, $6; and a greater rate according to size and occupancy.

#### HOTELS.

6. Minimum rate, $25; and a greater rate according to size and occupancy.

#### STORES.

7. For stores and offices, from $1 to $10.

RESTAURANTS.

8. For restaurants, etc., $5 to $30.

MARKETS.

9. For markets, $5 to $15.

WATER-CLOSETS.

10. For each family not exceeding eight persons, $3; for every four additional persons, $1; for each additional water-closet, $1; for hotels, stores, and all other buildings, from $1 to $8.

BATHING-TUBS.

11. For each family not exceeding eight persons, $1; for hotels, barber-shops, and all other buildings, from $1 to $6.

URINALS.

12. For each used by one family, $1; for hotels, stores, and all other buildings, from $1 to $6.

FOUNTAINS AND JETS.

13. For each 100 gallons discharged, 3 cents.

HOSE.

14. For street, sidewalk, or garden sprinkling, such rate as shall be determined by the Commissioners, not less than $3.

LIVERY AND PRIVATE STABLES.

15. For each horse, including water for washing carriages, $2; for each cow, $1; truckmen's stables, for each horse, $1 50.

BAKERIES.

16. Not exceeding 500 barrels of flour per annum, $5; for each additional barrel used, 1 cent.

BUILDING PURPOSES.

17. For each 1,000 brick, 4 cents; for each perch of stone, 1½ cents; for each 100 yards of plastering, 20 cents.

STEAM-ENGINES.

18. Working not ever twelve hours per day, for each horse-power used, $6.

19. For any manufacturing, mechanical, chemical, or other purpose, not specified in the foregoing tariff, such rate as shall be dermined by the Commissioners, but in no case less, for each 100 gallons, than 1 cent.

20. The rates of water for each 100 gallons, where the actual quantity is determined by meter, shall be as follows: For any quantity not exceeding 500 gallons per day, per each 100 gallons, 3 cents; for any quantity exceeding 500 gallons, and not exceeding 1,000 gallons per day, per each 100 gallons, 2½ cents; for any quantity exceeding 1,000 gallons, and not exceeding 2,000 gallons per day, per each 100 gallons, 2 cents; for quantities greater—such rates—not less than 1 cent for each 100 gallons—as shall be fixed by the Commissioners.

21. In all cases where water is required for purposes not specified in the foregoing tariff, the rate shall be fixed by the Board of Water Commissioners.

## THE BOSTON PETROLEUM ORDINANCE.

The following ordinance to regulate the manufacture and storage of Petroleum has recently been enacted by the Boston City Councils:

AN ORDINANCE

To regulate the manufacture and storage of Petroleum, Earth or Rock Oil, Benzole, Benzine, Naphtha, Kerosene, Camphene, and Burning Fluid.

Be it enacted by the Aldermen and Common Council of the City of Boston, in Common Council assembled, as follows:

SECTION 1. No person shall have, keep, sell, or manufacture, in any place or building within the limits of the city of Boston, any crude or refined Petroleum, Earth, or Rock Oil, Benzole, Benzine, Naphtha, Kerosene, Camphene, or Burning Fluid, in larger quantities than three barrels, except it be kept in close iron tanks, or in detached and properly ventilated sheds or warehouses specially adapted for that purpose, by having raised sills, or other contrivance, so as effectually to prevent the overflow of such substances beyond the premises where the same are kept or stored.

SECT. 2. No person shall manufacture or store any of the articles mentioned in section one, in any building or yard, situated less than one hundred feet from any other building, unless separated from said building by a brick or stone wall not less than six feet in height.

SECT. 3. Every person desiring to manufacture, sell, keep, or store any of the articles mentioned in section one, shall make written application therefor to the Chief Engineer of the Fire Department, stating in said application the place or building in which he desires to manufacture, sell, or store said articles, and the manner in which he proposes to keep them, and the Chief Engineer of the Fire Department shall examine the premises, and report to the Board of Aldermen whether, in his opinion, said premises are made conformable to the Ordinance; and, after his report, the Board of Aldermen may act upon said application.

SECT. 4. All licenses granted under the provisions of the previous section shall continue and be in force from the time of granting until the first day of April next succeeding.

SECT. 5. Every person at the time of receiving said license, shall pay therefor the sum of one dollar.

SECT. 6. It shall be the duty of the Board of Engineers of the Fire Department, in addition to the duties now imposed upon them by law, to make an examination of all premises where either of said articles mentioned in section one is manufactured, kept, or stored, so as to insure a strict compliance with all the provisions of this Ordinance; and they shall report all violations thereof at once to the Board of Aldermen.

SECT. 7. Any person who shall offend against either of the provisions of this Ordinance, shall forfeit and pay a sum not less than five, nor more than fifty dollars, for each offence.

SECT. 8. The Ordinance regulating the sale of Camphene or Burning Fluid, passed November 3, 1855, is hereby repealed.

BOSTON, April 25th, 1863.

LORING B. BARNES, Esq., Member of Common Council:

Dear Sir,—I return you the copy of a draft of an Ordinance regulating the Storage of Oil, as reported by the Chairman of the Committee on Ordinances, and which, as thus reported, seems to me to meet all the wants of the case.

You ask me for any observations on that subject that suggest themselves; and being somewhat conversant with the whole subject, in a practical point of view, it would give me pleasure to comply with your wishes.

In the good old times, which our oldest inhabitants can yet recollect, artificial illumination for our streets, manufactories, and dwellings, was confined to the old-fashioned mould and dip candles, and which gave place to a great extent to sperm and whale oil. Both of these articles had so high an igniting point, as any one knows who wanted to light a lamp in a hurry, that no legislation or regulation was ever deemed necessary as regards their manufacture or sale. These have been displaced, by degrees, as illuminating agents, with ALCOHOL, GAS, CAMPHENE, or REFINED SPIRITS OF TURPENTINE, and COAL and PETROLEUM OILS.

GAS.—On the first introduction of gas into England, it was met with the most formidable opposition, which soon took the form of legislation, or attempted legislation. It was asserted—it poisoned the air, and it poisoned the earth by being conducted through it, and the gasometer was a powder magazine. It was related of one of the Fathers of this great discovery, that when Parliament was about to forbid the construction of what was then called large gasometers, he requested a Committee of Investigation, and meeting them beside his gasometer, he thrust a pondrous bar of iron through it, and immediately applied a torch, and then turning to the committee, remarked: "I have nothing more to say." This ended the opposition to large gasometers. Coal-gas has since progressed, extending all over the world, performing its useful mission, and, notwithstanding its volatile and explosive nature, is now unrestricted by vexatious legislation.

Alcohol, as an illuminating agent, requires to be of the highest proof and most inflammable igniting point; as a material to commence a conflagration with, it has no superior and few equals; but when diluted with water, it loses its inflammability, and, consequently, easily yields to the efforts of the firemen. It is now transported all over the world in enormous quantities, whole shiploads at a time, both for illuminating purposes, the arts and manufactures, and other less useful or laudable purposes. In its transportation and storage, it is not obstructed by legislation, and the many thousand barrels that are daily and weekly distributed from the city of New York all over creation, meets no impediments from restriction or regulation.

Camphene, or Refined Spirits of Turpentine and Common Spirits of Turpentine has an easy igniting point as compared with fatty oils, and a difficult one as compared with alcohol. In its pure state, accidents and casualties would have been so unfrequent, that it would not probably ever have been made the subject of special legislation or regulation, but for its admixture with alcohol, under the well known name of Burning Fluid; but it had this dangerous element in it. When once ignited, water could not extinguish it, consequently it would have to be left in quiet to burn up. The quantities of Spirits of Turpentine transported to all the marts of commerce, was, before the rebellion stopped the source of supply, very large, probably amounting to one hundred thousand barrels annually. How safely it was stored and transported, and the few conflagrations and accidents originating from it, is well known; and it was never obstructed by any vexatious or onerous regulations or restrictions.

BURNING FLUID has filled a large space in the "Sensational Accidents" of the day, and although almost universally feared, was as almost universally used. At the time of the introduction of the coal-oils, four years ago, its consumption in the United States was greater than that of sperm, whale, and lard oil combined. The accidents from its explosions were of the most frightful nature, frequently fatal to the person holding the lamp. This material was composed of about 95 per cent. of alcohol and one-part camphene; it was not itself explosive, only its vapors when mixed in certain proportions with the atmosphere, and in a metal lamp, and never filled except by daylight, little knowledge of its properties would have ever reached the public ear, as certainly some nine-tenths of the from 200 to 500 accidents yearly happening were occasioned by filling the lamps when ignited, and the remaining one-tenth mostly by breakage by falls. When stored in large lots, and fully on fire, it does not yield to the efforts of the fireman as readily as alcohol, as that combines with the water, and leaves the spirits to be gradually consumed. This article has been subjected to much legislation and many restrictions, but, until the time of the supply being cut off, was universally stored and sold, wholesale and retail, as other articles, and, whatever the legal consequences might have been, the practical effect upon both legislature and insurance regulations was to embarass without remedying the evil, and at no time was it so universally used, and so rapidly spreading and being stored and sold, the same as other merchandise, with the laws unheeded and unexecuted on the dealers, as at the time the supply was cut off by the rebellion, and the simultaneous introduction of the coal and petroleum oils.

COAL-OILS, at the time of their introduction, were considered not only as a great blessing from their cheapness and excellent light, but as a substitute for the dangerous burning fluids. Coal-oils have but little naphthas generated in their manufacture, and but for the more recent discovery of petroleum, would probably, like the fatty oils, never have been subjected to attention as requiring legislation or regulation; but after two years of very rapid extension, and an entire absence of serious accidents in the storage and sales, they have as rapidly yielded to the petroleum oils, now becoming such a vast article of commerce.

PETROLEUM OR ROCK OILS.—The first successful supply, on a comparatively large scale, was only commenced within three years. It was first brought to public notice by a Mr. Drake, who was a temporary resident at Titusville, Pa., where he went for his health, having previously filled the relation of conductor on the New York and New Haven Raiiroad. Seeing the surface indications, he conceived the idea of boring into the rock. He did what others since have said they talked of doing, having sunk his shaft about 100 feet, he struck a vein of oil which yielded, by pumping, some 50 or 60 barrels per day. This experiment was pursued the next summer with astonishing celerity, and many thousand others were sunk. Probably some 40,000 or 50,000 barrels was produced during the season, and very large amounts of money lost by unsuccessful adventure and unproductive lands.

These were called the pumping wells of the upper deposits. They were of a comparatively heavy specific gravity, and had little light material, and although lighter, and consequently more inflammable than the coal oils, would probably never have occasioned any subject of legislative or regulative action. It was only in the early part of the summer of 1861, that the flowing wells were first developed by boring the rock to the depth of some 500 feet. The largest of these wells at first flowed with such power as to force a column of oil, accompanied with immense volumes of gas, through a hole of three inches diameter, some forty feet into the air, and yielding some 1,000 to 2,000 barrels of oils daily. So large was the volume of gas, combined with minute globules of oil, that at the fatal accident on the Buchanan farm, the flame ignited from a steam boiler some rods distant, and killed and wounded some 30 or 40 spectators, most of them fatally, and some were consumed on the spot where they first stood. From this source, in the year 1862, were produced perhaps about one million barrels of forty gallons each, which was exported all over the world, and some 300 oil-works commenced operations. This amount is about equal to three times the production of the whole American sperm and whale fleet, when it numbered 700 or 800 sail of vessels, and the extreme low price to which it fell, proved disastrous to very many engaged in it. Now, these light oils of the flowing wells, full themselves of light bodies of the naphtha series, and ultimately blended with the non-condensible gases, were forwarded all over both America and Europe in the crude state, and also, through the ignorance of many parties, the manufactured was also put into the market containing all the light bodies. The consequence was, the autumn of 1861 and winter and spring of 1862, witnessed any amount of conflagrations, explosions, &c., and which was followed, in some instances, by absurd and restrictive regulations. Experience soon learned the parties in interest to ventilate, to some extent, their oil, in vats at the wells, and, consequently, to remove those extremely light and gassy vapors, and manufacturers also learned to separate their benzole and naphthas from the burning oils, and the article is fast becoming to be understood, and the objection of insurers, both inland and marine, is becoming modified, and objectionable and absurd restriction ceasing to be subjects of agitation. The naphthas and benzole will take their place along side of alcohol, burning fluid, and spirits of turpentine, which are now stored and transported in large quantities, and with very few or no special accidents from them. The English Parliament passed, last year, some very unjust, absurd, and restrictive regulations, which, whilst making all oils, naphthas, &c, with an igniting point over 100°, entirely free from restrictions, made all under subject to the restrictions of gunpowder. The commerce of London went on in its usual routine, and we never heard of any restrictions being applied to naphtha which affected its sale or use, and a report recently published of the Fire Wardens, says, two conflagrations, &c., originated in oils, &c., and 120 odd in gas in that city.

There is a point of danger that your proposed ordinance covers, and which seems to me very desirable for safety, but which the legislation of other places does not, so far as my observation extends—that is, as oils will always be stored in large bodies, it is to guard against extensive conflagrations when fire does happen, and confine it to its original limits; yours does so. All other legislation to me appears injudicious, as it never will reach or attempts to reach where the danger, if any, is most prominent, viz., that in the store of the retail dealer, and the cannistry of families, where it is finally distributed, and from whose innumerable premises few or no accidents occur, but what the common insurance fully covers.

The Legislature of this State, as well as that of the city of Boston, has thus far kept themselves free from the absurd legislation, which has come out of the haste and ignorance of other places. The whole subject was, last year, before a committee of the Legislature, and they reported against any action, as time had not developed what might be desirable. Like spirits of turpentine, when once ignited, if confined to the premises by a cellar or brick wall, it is not a dangerous fire. The combustion is comparatively slow for want of a supply of oxygen; there are no cinders, and the flame passes off in vast volumes of smoke. In Pittsburg, the brick depot, nearly as large as the Worcester, had six thousand barrels stored in the cellar; a gauger went down into the cellar to gauge it, put the candle into the bung to see the figures of his rod, and the gas of the light crude oils took fire, and it, of course, all burned up, but no explosion followed. At Schieffelin's yard, Brooklyn, 15,000 barrels were consumed, of course entirely, but no explosions; the yard was an inclined plane, and much went into the dock, and, as good fortune would have it, an eddy kept it there: a lumber yard on the opposite side of the street, the timber of which was not scorched; had it have been on the windward side instead of the leeward side, from the greater supply of oxygen, the result would have been different, but a brick wall would have protected it. Brooklyn has a coal-oil ordinance, but New York and Jersey City none, yet there are five or six yards in Brooklyn, storing from 10,000 to 30,000 barrels each, and most of them about as dangerous for a general conflagration as could be desired by an incendiary; besides, the whole shore is studded with yards for storage of tar, pitch, turpentine, spirits, alcohol, &c. But, as I before observed, your ordinance, as drafted, will, I think, cover the whole subject, and without any decidedly vexatious and useless restrictions, which so embarrass trade without accomplishing any great object.

If these remarks help you in coming to any judicious determination, it will give pleasure to

Your obedient servant,

SAMUEL DOWNER,
President Downer Kerosene Oil Co.

## GAS IN ENGLAND.

In Dr. Hillier's report on the quality of gas supplied by the Imperial Gas Company, in St. Pancras, London, during the month of March, he found the average illuminating power to be only 13.8 candles. He also reported traces of ammonia in all the samples he examined, and from 15 to 16 grains of sulphur in 100 cubic feet of the gas.

Dr. J. Northcote Vinen, in his report on the gas supplied by the Surrey Consumers' Company, during the two weeks ending April 11th and 18th, mentions having detected an average of 0.87 per cent. of carbonic acid. When it is rememberod that one per cent. of carbonic acid diminishes the illuminating power of gas by six per cent., it will be seen that the presence of this large quantity of carbonic acid shows a good reason why the gas is deficient in illuminating power. The illuminating power of this gas averaged, during the two weeks above named, only 13.36 candles. In the report of Dr. Vinen for the two weeks preceding those above mentioned, the amount of carbonic acid in the gas was 1 per cent.

An opposition gas company is about being formed in Birmingham. The consumers of the existing company, conceiving themselves to have been aggrieved, convened a meeting, at which the following resolution was adopted:

"That it is expedient and desirable that steps should be taken to establish a gas consumers' company for this borough and district, and that the gentlemen convening this meeting be appointed a provisional committee, with power to add to their number, for the purpose of considering a scheme to carry the same into effect, and to report to a future meeting to be by them summoned at their earliest convenience."

The price of gas now charged in Birmingham is 3*s.* 9*d.* per thousand cubic feet, with discounts to large consumers, which reduce the price to 2*s.* 10½*d.* Mr. Hughes, the well-known author of a treatise on gas-works, has examined the illuminating power of the gas made by the Birmingham company, and pronounced it equal to 16 candles, which is far superior to the illuminating power of London gas.

GAS EXPLOSION IN MONTREAL.—An explosion of gas recently took place in Montreal, C. E., which fortunately was not attended with any loss of life. Gas had been escaping all night from a leak in the pipes of a consumer, and on his taking a candle to ascertain the cause of the leak, the gas took fire and exploded, knocking down the luckless consumer, and burning his face and hands, besides doing damage to the house.

## REVIEW.

*"A Practical Treatise on Gas and Ventilation, with special relation to Illuminating, Heating and Cooking by Gas, including Scientific Helps to Engineer Students and others, with illustrated diagrams. By E. E. Perkins: Philadelphia, Henry Carey Baird, (successor to E. L. Carey,) No. 7 Hart's Buildings, Sixth st., above Chestnut. 1856."* 16mo. pp. 174.

The American press has as yet furnished nothing in the shape of a book on the theory and practice of the manufacture of illuminating gas worthy of the attention of students of the art. Having been often impressed with a regret that this should be the case, it was with some degree of hopefulness that we took up the small volume before us, cherishing the expectation that we were about to peruse a much needed work and one which might deservedly take a prominent rank as an authority on the subject. Our hopes were, however, destined to a speedy disappointment: not, indeed, that the book gives no information of value, for on the advantages of using gas it affords many useful hints; but while claiming to be an original treatise, and copyrighted as such, it is one of the most unblushing and wholesale plagiarisms which we have ever seen. Plagiarism is too mild a term to express the real character of the work, a much more emphatic word is needed to denote the entire appropriation of another's property, and we can but feel astonished at the extent of the audacity of a scribbler who not only pilfers page upon page, but puts his name on the title page as "author."

The first chapter in the book, entitled "*Advantages of Gas in Private Houses*," is taken, title and all, almost *verbatim, literatim et punctuatim*, from the widely known little treatise of J. O. N. Rutter, Esq., of Black Rock, Brighton, England, of which more than one hundred thousand copies have been circulated. Upon taking these two books and reading them side by side, they will be found to correspond almost exactly, the only difference being that the "author" of the work in question exhibits an unusual fondness for unnecessary adverbs and adjectives, together with a variety of uncouth phrases, by the introduction of which he mars the symmetry of Mr. Rutter's well-turned sentences. Those who have read Mr. Rutter's writings upon gas, have noticed the elegance of diction and the harmony of expression which characterize them. His vocabulary is large and well selected, and all tautology and redundancy are carefully avoided, while his grammar is unexceptionable. Indeed we believe it is the union of these characteristics which has tended to give Mr. Rutter's works so wide a circulation, and to have so strong an effect in extending the use and application of gas-light.

The addenda which our "author" has thought it necessary to interpose, have not improved the work, as may be supposed. In all places they are highly objectionable, while in not a few instances they are positively ridiculous. It would occupy too much of our space were we to point out a tithe of these interpolations; we will, therefore, only call attention to a few of them.

As instances of the respective styles of putting a question, we gives the following sentence from each of the books, on the subject of ventilation.

Mr. Rutter's remarks: "It is easier to talk, and to write, about ventilation than to give any general directions for rendering it in all cases perfect." Our "author" puts the idea in the following words: "It is just as easy to ventilate as it is to talk about it, &c." In speaking of the course to be observed in laying pipe in a house, Mr. Rutter observes: "The most direct course to the burners, so far as it is practicable, is in all respects the best." Our "author," who disdains all "*would-be refinement*," thus states the proposition: "The most direct course to the burner should be always aimed at." Whether he advises "aiming at" it with a stone or a gun he does not explain.

Another example of this "improving" the style of Mr. Rutter, and of making a forcible thrust at the close of the sentence. In speaking of the heat which people complain of as generated from gas-burners, Mr. Rutter says:—"I only remind them if they complain of heat, the gas is not to be blamed, but only the burner." Our "author" has it: "If, however, persons complain of heat, *and make no effort to get rid of it*, we only remind them that the gas is not to be blamed,

but the burner first, *and themselves next.*" We have italicised the interlarded words. The idea that people must blame themselves if gas makes too much heat is original, and about the only original thing in the chapter.

We have characterized this chapter as an unblushing piece of plagiarism. We repeat this assertion, and state that nearly all of it relating to gas, is copied word for word, with some trivial alterations and interpolations, from Mr. Rutter's book. We will give a sample of this pilfering, by placing extracts from each work side by side, where the identity will be established. In giving these extracts we will "begin at the beginning."

(*From Mr. Rutter's Book.*)

ADVANTAGES OF GAS-LIGHT IN PRIVATE HOUSES.

"The superiority of coal-gas as compared with every other material for producing light has been too long established in this country to require either arguments or illustrations for the enforcement of its claims. The only point respecting gas-light, which still seems to be but imperfectly understood, is its applicability to domestic purposes. This, I believe, is more the result of defective information than of prejudice, or well-founded objections. There are thousands of families who would readily avail themselves of the comforts of gas-light in their dwellings, provided its relative cost, and other numerous benefits, were properly explained to them. On whom does this duty more appropriately devolve than on those who are engaged in the manufacture, and interested in the sale, of gas?

"The use of gas in dwelling-houses has already made very considerable progress, &c."

(*From the "Author's" Book.*)

ADVANTAGES OF GAS IN PRIVATE HOUSES.

"The superiority of coal-gas as compared with every other material, for producing light and heat, has been too long acknowledged to require arguments or illustrations. The only point respecting gas, which seems to be imperfectly understood is its general applicability to domestic purposes; and which is the effect of defective information, rather than of prejudice. There are thousands of families who would readily avail themselves of the various comforts and conveniences of gas, provided its relative cost and other matters were properly explained to them. On whom does this duty devolve? On those who manufacture, or those who live by the profit of gas-furniture? Neither the one nor the other: it devolves on the engineer, who is not an employee of any particular person or company. Taking that office, therefore, upon ourselves, as in that capacity, we will proceed to say: The use of gas in dwelling-houses has already made considerable progress, and is daily increasing, &c."

This extract serves to show the character of the book, and to stamp it as a literary piracy of the worst kind. The "author" not only appropriates another's words and expressions, but interlards them with his own coarse and ungrammatical phrases, and thus attempts to cover up his depredations. Nearly all of his book which treats of gas is taken bodily from Mr. Rutter's work, which has been cut and dovetailed and tortured into such shapes as to fit the "author's" clumsy diction. We might go on and fill our columns with parallel extracts showing the extent of the spoliation, but the above is a fair specimen of them all. The description of the gas-meter is taken entirely from Mr. Rutter, including the wood-cut, the lettering, and the foot note, with the alteration of scarcely a single word.

In that part of the volume relating almost exclusively to ventilation, the "author" may or may not have had a book from which to copy his writings. We are disposed to take a charitable view of the case, and to admit the greater part of this to be original. We do so partially because the peculiar high-pressure style of the "author" peeps out from nearly every page, and ideas which might have been enunciated in plain English and in a few words, are clothed in the most grandiloquent language, and take scores of words to express them.

The following may be quoted as a specimen of the "hifalutin" style which our "author" likes to use. As a precautionary measure, we advise our readers to take a good long breath before attempting to pronounce it, or we cannot tell what might be the consequences.

"We do not desire to be considered sentimental; we believe we are by far too practical for all that 'would-be refinement;" but we will admit we are continually grieved at seeing the shocking neglect of all rational attempts to ventilate, even in the latest and best-erected houses and public buildings—palaces, built, and being built, here, there, and scattered with a lavish liberality over large tracts of the cities of this empire country. Gorgeously finished, furnished, and appointed with all that wealth can command and good taste suggest; inhabited by high, intellectual, philanthropic, and tried men, wealthy, surrounded by their families—yet, each and all, even the delicate, high-souled fair ones, mothers and daughters, liable to, and positively, though unwittingly, contributing by their presence to a deleterious indoors atmosphere; all, all this, and its concomitant evils, its baneful influences, exist for the want of a mechanical arrangement for a proper ventilation—a matter at once simple, not expensive; a real luxury in winter, and particularly grateful in summer—at all times positively and absolutely necessary for the intellectual and physical development of the young; in the highest dedree demandable by the middle aged and more advanced members of the human family, for other but equally intrinsic results."

Whew! In the name of the prophet—figs! Our "author" does not inform us of the precise stature of the "high" men, but we are led to infer, from the redundancy of other adjectives concerning them, that they must be of an unusual size. But we must hasten on to the close of our notice of this wonderful book. The following extracts will serve as additional evidences of the high-pressure style of argument the "author" uses to impress his views upon his readers. The italics and capitals are all the writer's own. Speaking still of ventilation, he says:

"This is a subject as yet but partially developed in the highest chemical works; but of this fact we *are* certain: pure air, such as is fit for respiration, is *positively* electric, while *the air which has become impure, and consequently unfit for respiration, is* NEGATIVELY ELECTRIC! *Physicians, aid us!*

"Fathers of families, we charge ye, on your love and duty to child, to wife, home, and country, to look to this!

"*Mothers of families*, and ye suckling mothers, fostering your little ones, pledges of love and your honor, born of you, as many of them necessarily are, for high trusts and political responsibilities—called, as they will be, to exhibit all the heroism, the virtue, piety, and wisdom of the ancients, and more recent honored dead, for the maintenance, teaching, and governing this mighty modern republic, whose destiny is written, as it were, '*with a pen of iron, and in letters of brass*'—I say, will not you urge the necessity of inhaling pure air in your homes, so that the future man may, in his earliest childhood, lay the foundation of a robust constitution?

* * * * * *

"Daughters of America! second not to any—not to the *ultra aristocratic belles of Almack's*, nor the boasted beauties of the present *court of the Tuilleries*—which will you honor with your suffrages, pure air or cosmetics?—countless crudities, which but multiply 'the ills flesh is heir to,' with a *physician* on full pay in perspective! Pray, *remember:* fresh air, pure air, gives elactisity to the step, buoyancy to the spirits, secures serenity to the pure of heart, adds a sparkle to the eye of innocence, induces good digestion, and sound, refreshing sleep; expands the chest to the full development of true womanly beauty, and braces all its organic powers for emitting sweet, sonorous sound for song, and is an antidote for dyspepsia and *ennui*. It will cause the 'human face divine' to rival the fairest damascene for delicacy, the breath for its sweetness, and shames forever the art of Italy's fair enamellers.

"Sons and citizens generally! you who sternly judge of new matters by their promised merits, in submitting what we have and what we are about further to state, we have only respectfully to add, we refer you to, and abide ourselves by, the admirable and notable aphorism bequeathed to his country by one of your mighty dead: 'Be sure you are right—then go ahead.'"

These soul-stirring appeals ought to go straight to the hearts of men! We have heard of the eloquence of Demosthenes and Cicero, but we doubt if they could have moved their hearers with sentences like these! The words of our author are sublime compared with the tame utterances of those ancient orators! What marvellous descriptive powers! In desiring to express the idea that pure air expands the chest and improves the voice, who but our "author" would think of clothing his thoughts in such language as, "it expands the chest to the full development of true womanly beauty, and braces all its organic powers for emitting sweet, sonorous sound for song." "Sweet, sonorous sound"—what an expressive phrase! In the words of Dr. Ollapod, "Thank you, thank you, my good sir; I owe you one."

The touching reference to the memory of Davy Crockett, and the quotation of his "admirable and notable aphorism" evince a scholarly appreciation of the value of the teachings of great men. How unfortunate it is that the "author" did not wait until he was "right," before he went "ahead" in abstracting so much from the writings of Mr. Rutter.

But, seriously, what have we before us? A work pretending to be a treatise on gas and ventilation—an original treatise. Every word of value in it copied from the writings of another man, while the remainder is filled with the most alarming sentences, the mere perusal of which is a task of no small difficulty. We have heard of literary piracies before; we have heard of plagiarisms of all kinds, but never have we seen a specimen put forth with such audacious coolness as the chapter in this book treating of gas. We have not read the "Scientific Helps to Engineer Students," but if they bear any remote resemblance to the chapters on ventilation we hope to be spared the task. We would rather attempt to read a passage in the Sanscrit than to plod through such a mass of rubbish, and we are satisfied that whatever information they may convey, the labyrinth of words through which it has been drawn is sufficient to have crushed all the sense out of it. If our readers desire to employ themselves by practicing mental gymnastics, we advise them to buy the book and read it, and we pledge our word for it that a single perusal will be deemed sufficient to prove that some works cannot be digested at will. We hope, however, that moderation will characterize the reader; otherwise he may suffer from a species of mental dyspepsia, and thus be subjected to "a *physician* on full pay in perspective."

## MONGRUEL'S NEW LIGHT.

We have ventilated this latest imposition pretty freely in our columns, and pointed out the utter folly of claiming for it either originality or value of any kind. As a *coup de grace* we again allude to it, to insert the following opinions, agreeing with our own, which we find in the London *Ironmonger:*

In our February number we fearlessly exposed the worthlessness of M. Mongruel's Patent Generator, introduced by a new company, for increasing the illuminating power of coal-gas, and obtaining a useful light from atmospheric air. We were taken to task by some of our contemporaries for our ungenerous attack upon the promoters of the company, but no attempt was made to refute our statements. As the opinion we formed from our own examination was at variance with the wonderful testimonials published by the directors, we were not a little pleased to find that experience had confirmed our views. The following article from the *Oil Trade Review* will prove that we did right in warning our readers against investing money in shares of the new company:

"We are under the necessity of again returning to the subject of the projected Photogenic Gas Company, for the purpose of enlightening our readers on the subject of certain errors contained in the circular issued by the promoters. Relying for the moment upon the imposing representation put forward and endorsed by a respectable array of gentlemen's names, we were induced to repeat the statement that the photogenic gas was constantly in use at certain cafés and other establishments in Paris. Since witnessing the experiments at the company's office, in Bishopsgate street, we have had an opportunity of visiting some of the fourteen establishments in Paris which are particularized by the promoters as being lighted with the photogenic gas, and find, that although the proprietors of some of these places were induced to try the effect, they in a very short time abandoned the use of it. At the Café de Bade, Boulevard des Italiens, we were informed that the system was used by a late proprietor, and the new one thinks it did not prove a benefit. The disagreeable odor arising from its use could not be borne, and no saving was effected. M. Delail, of Passage Jouffroy, says that he used the photogenic gas for fifteen days only; he did not think it an advantage to continue it, and considered the odor very disagreeable. At the establishment of M. Hincelin it is still in use; and we think it right to state that he appears perfectly satisfied with it as an *improver* of the ordinary gas (strong light being required upon the premises.) M. Hincelin has no belief in the economy of the application, his only object being to obtain an improved light. These facts may be taken as a specimen of the replies met with at most of the establishments mentioned in the company's prospectus. We are not in possession of any information from the 'forty or forty-five provincial towns of France,' in which towns, we are informed by the prospectus, the patent is in extensive use; but we feel ourselves called upon, from the many inquiries we have received upon the subject, to acquaint our readers with the result of our investigations, that they may learn to receive with some degree of caution the statements put forward in the programmes of newly-projected undertakings."

## PATENTS.

### UNITED STATES

38,305.—Benjamin Garvey, New York City, for a Coal-oil Lamp:

I claim, first, wick-tubes, the diameter of which is determined in the manner and for the purpose substantially described in the accompanying specification, taking one-sixteenth of an inch as the average diameter of tubes for general use.

Second, I claim the combination of two or more such wick-tubes, for the purpose of producing one large flame, by the combination of two or more small flames, in the manner described, substantially in the accompanying specification.

38,308.—William M. Henderson, Baltimore, Md., for a Pump:

I claim, first, The arrangement of the pump-barrel, A, and the air-vessel, C, as herein set forth.

Second, Two suction valvular pistons, connected and moving together in the same line, in a single barrel; the valves opening at different times, and in opposite directions, yet moving with their pistons through the cylinder at the same time, and in the same direction, at any one stroke, in combination with a cylinder having a central suction-pipe attached thereto, so as to be always between the two suction valvular pistons at all points of the stroke, as described.

38,334.—John A. Reed, Jersey City, N. J., antedated Jan. 23, 1863, for a Direct-action Steam Pump:

I claim the combination of the two cock-valves, B D, on the steam and water cylinder, the levers, d d', weights, E E, tappet rod, f, and tappet arm, h, on the piston-rod, the whole combined and operating substantially as herein specified.

38,349.—Andrew Judson White, Brooklyn, N. Y., for a Lamp-wick:

I claim a machine-made wick, composed of unspun cotton, flax or jute, covered and held together with gluten.

38,355.—Chas. Deavs (assignor to Archer & Pancoast), New York City, for a Lantern:

I claim, first, The case or body, C, of the lantern formed of the glass plates, e e, and a sheet-metal portion so cut or shaped as to form, when bent, two sides, a a, and the top, b, of the case or body, the lower ends of the sides being connected by crossbars, c c, substantially as set forth.

Second, The combination of the case or body, C, constructed substantially as described, with the lamp, A, the former being connected to the latter by hinges or joints, D, as and for the purpose specified.

Third, Forming the sheet-metal sides, a a, of the lantern, with beveled inner surfaces, j j, to serve as reflectors, substantially as set forth.

Fourth, The rods, f, bent at their upper ends to form pivots for the cap piece, E, and also to form eyes for the bail or handle, G, and secured at their lower ends to the crossbars, c c, to serve as guards for the glass plates, e e, as herein described.

38,357.—Stuart Gwynn, New York City, assignor to Geo. Odiorne, Boston, Mass., for Apparatus for Carburetting Gas:

I claim, first, The general arrangement and combination of apparatus, substantially as herein shown and described, for forcing the air through a porous medium diffusely charged but not filled with fluid, so that the air shall penetrate through as well as pass over the mass of porous substance, as herein set forth.

Second, The arrangement and combination of apparatus, substantially as herein shown and described, for maintaining the proper level of the fluid and effecting the vaporization, in the manner set forth.

Third, The arrangement and combination of apparatus, substantially as herein shown and described, for generating hydrogen gas to supply atmospheric air charged with the vapor of hydrocarbon fluids in proportion to the excess of carbon it contains.

38,360.—Nathan Stedman (assignor to himself and Jos. Miller), Aurora, Ind., for a Pump:

I claim the lever, F, when used in combination and placed in relation with the two valves, D E, of the pump to operate in the manner and for the purpose herein set forth.

I further claim the piston valve formed of the two annular plates, g g', connected by vertical rods, h, in combination with the holes, i, in the upper and lower ends of the piston, G, and the tubular piston rod, H, all arranged for joint operation, as set forth.

38,378.—D. N. Denman, Milburn, N. J., for a Liquid Filter. Antedated December 25, 1862:

I claim, first, a device for filtering water and other liquids, composed of a wheel, F, fitted in a reservoir, A, and provided with an endless apron or roll, G, of felt or other fibrous material, when all are arranged in such a manner that the liquid to be filtered will pass from the reservoir through the apron or roll into the wheel, and be discharged from the ends of the latter, substantially as set forth.

Second, In combination with the reservoir, A, wheel, F, and apron or roll, G, the rotary brush cylinder, I, when used as and for the purpose set forth.

Third, The pivoted bar, J, with roller, K, attached, in combination with the apron or roll, G, wheel, F, and reservoir, A.

Fourth, The driving-wheel, D, and penstock, B, when combined and arranged with the reservoir, A, wheel, F, and apron or roll, G, to operate as and for the purpose herein specified.

38,388.—R. W. Hawkins, Pittsburgh, Pa., for a Chimney-Fastener:

I claim the use of a chimney-fastener for lamps, consisting of a slide placed in the burner-frame and having arms or other equivalent device for holding down the flange of the chimney on one side, and capable of being slid round toward the points or other device by which the chimney is held down on the opposite side, substantially as hereinbefore described.

38,401.—J. B. McMillan, North Vernon, Ind., for a Water Elevator:

I claim the combination and arrangement of the ratchet collar, F, compound pawl and brake, E D, tipping-hook, L, tipping-ball, B, and return spout, G, all substantially as shown and described.

38,416.—Henry Rosen, Elkhart, Ind., for a Pump:

I claim driving the buckets of the two barrels, A and A', from a crank-shaft, I, through the medium of the rods, K and K', arms, D and D', and rods, B and B', the whole being arranged and operating as and for the purpose herein set forth.

38,417.—George C. Roundey, New York city, for a Gas-Burner:

I claim the combination of the cap-tube, A, the expansion chamber, B, and fish-tail tip, C, substantially as herein described.

38,422.—Orrin J. Savage & George P. Hawley, Ithaca, N. Y., for a Lamp Burner:

We claim, first, The cone, A, with its slot narrowed at the top, and gradually widening by straight and uniform lines to the bottom of the square or rectangular bottom as represented.

Second, The combination of the cone, A; the broad and flaring, finely perforated or foraminous sheet-metal belt, B, widening as it descends, and the base, C, narrowing as it descends, with large perforations; made and used as represented and described, for the purposes set forth.

38,427.—Guiseppe Tagliabue, New York city, for an Instrument for ascertaining the Amount of Water, &c., in barrels of oil, &c.:

I claim, first, The tube constructed of metal and glass.

Second, The valves at top and bottom acted on by one rod and opening and closing together.

Third, The graduated scale on the glass sides of the tube constructed as aforesaid.

Fourth, The whole constructed substantially as and for the purpose described.

38,429.—George W. Thompson and Joseph Foster, Bordentown, N. J., for an Apparatus for generating Gas from Petroleum and other Hydro-carbons. Ante-dated Nov. 10, 1862:

We claim depositing on the bottom of the retort a layer of unslacked lime, charcoal, or other equivalent material, and so arranging the feed-pipe, D, that the oil will drop directly on to the said layer, as and for the purpose herein set forth.

38,438.—S. Lloyd Wiegand, Philadelphia, Pa., for a Process of manufacturing Illuminating Gas:

I claim the combination of the processes disclaimed when combined in the manner or in any equivalent manner, as set forth and described.

38,444.—Joseph W. Douglas (assignor to W. and B. Douglas), Middletown, Conn., for a Pump:

I claim the valves, j j, k k, all placed on one and the same plate, when used in combination and arranged with a cap, E, and a single screw-bolt, F, passing through a pier, e, substantially as shown and described.

38,448.—Charles C. Lloyd (assignor to himself and R. H. Gratz & Co.), Philadelphia, Pa., for a Dry Gas-Meter:

I claim, first, Dispensing with the use of packing around the shafts of the spiral flange wheel and the index mover, or either of them, by placing the said spiral flange wheel, G, outside of and separated from the gas-chest, substantially as described for the purpose specified.

Second, I claim the employment of a supplementary packing-box in combination with each of the vibratory flag-shafts used for operating the valves and index, the said packing-boxes being placed in the top plate of the gas-chest, substantially as described and set forth for the purpose specified.

Third, I claim the arrangement of the valves, B B', in such relation to the final outlet channel, L, that the latter shall serve as a single and direct outlet channel from the central openings of the said valves to the outside of the meter, substantially as described and set forth, for the purpose specified.

Fourth, I also claim making the curved recesses, 2 2 3, in the two side faces of either the cap or seat of each of the valves of a dry gas-meter, substantially as described and set forth, for the purpose specified.

38,453.—W. H. Pierce, Somerville, Mass. (assignor to himself and Samuel Adlam, Jr., Boston, Mass.), for a Lamp:

I claim, first, Providing the metallic collar of a lamp with a projecting portion or continuation, which shall form the handle of the lamp, substantially as set forth.

Second, I claim the combination of a glass lamp-body, A, metallic collar, B, handle, C, substantially as set forth.

Third, Fastening a metallic handle to a glass-lamp by means of the collar, and without puncturing the glass, substantially as set forth.

38,457.—J. S. and T. B. Atterbury, Pittsburgh, Pa., for a Lantern:

I claim, first, applying a metallic reflector to a lantern surrounded with glass, substantially as herein described.

Second, Making the glass surrounding the lantern, or the lantern glass, the support for the reflector, substantially as herein described.

38,492.—Wesley L. Jukes, Covington, Ky., for a Lamp Chimney:

I claim, as a new article of manufacture, the glass lamp chimney formed with longitudinal corrugations, A, substantially as and for the purpose set forth.

38,498.—William C. Owen, Brooklyn, N. Y., for an Attachment of Lantern and Reflector:

I claim the combination of a lantern and reflector, when the latter is applied or arranged at the outer side of the former, substantially as herein set forth.

38,499.—William D. Parrish, Philadelphia, Pa., for an Apparatus for mixing Gases:

I claim the described mode of mixing gases in variable proportions, consisting in the employment of two meters of any ordinary construction for measuring gases: the said meters being so connected by the described mechanism, or any equivalent thereto, that the motion thereby transmitted and the relative quantities measured by the meters can be adjusted substantially in the manner and for the purpose herein set forth.


## GAS-BURNERS.

T. G. ARNOLD,
MANUFACTURER OF
**GAS-BURNERS,**
And Importer of Scotch Tips,
No. 447 Broome St.,
Second door west of Broadway, New York.
Mercury Cups, Portable Sockets, Burner Pillars, Burner Pliers, &c., &c.

ORNE'S PATENT FILTER REGULATING GAS-BURNER,
Admitted by all practical and scientific men who have examined its movements, to be
THE BEST GAS-BURNER YET INVENTED.
They are
*Self-Regulating,*
*Gas-Purifying,*
*Indestructible, and*
*Most Economical.*
For sale by—
**S. A. STETSON & Co.,**
350 Washington Street,
Boston, Mass.

**C. GEFRORER,**
Manufacturer of
GAS-BURNERS,
**For Lighting and Heating Purposes.**
Gas Heating and Cooking Apparatus; Fitters' Proving Apparatus, &c.
No. 111 South Eighth St.,
Philadelphia.

## PETROLEUM GAS.

THE AUBIN GAS-WORKS COMPANY, of Albany, N. Y., have adapted their Works to petroleum and the heavy oil obtained from its distillation. Parties desiring information will be referred to Village Gas-Works thus adapted, where the ordinary yield of gas is from 150 to 200 cubic feet per gallon of oil. This yield, and the great improvements which experience has added to the Aubin Works, enable them to make a rich gas at a low cost—the only way to compete with kerosene.

## STEAM-PUMPS.

WORTHINGTON'S Steam Pumps, extensively used by Gas-Light Companies. For Sale at greatly Reduced Prices.
Also, a new and highly successful Pump, driven by water pressure, requiring no attention or repairs, and the most economical water motor yet constructed.
Patent GATES, for Water and Steam-stops.
HENRY R. WORTHINGTON,
61 Beekman street, N. Y.

WEST'S IMPROVED PUMPS, the most Simple, Durable, and Powerful, and the Cheapest in use.
J. D. WEST & CO.,
179 Broadway, N. Y.

## ANALYTICAL CHEMIST.

C. ELTON BUCK,
**Analytical and Consulting CHEMIST,**
39 NASSAU STREET, NEW YORK,
Analyses of Ores, Minerals, Soils, Guanos, Coals, &c., and Tests of Commercial Articles, carefully and promptly made. Consultations may be had, and opinions given on Chemical questions. Samples for analysis from a distance, may be sent by mail or express, directed to the Laboratory as above.

## PHOTOMETER APPARATUS
FOR SALE.

A COMPLETE BUNSEN PHOTOMETER apparatus, with portable room, connections, joints, clock, experimental meter, scales and weights. The whole apparatus is in perfect order, and is adapted for the most delicate scientific investigations.
Apply at the Rooms of the American Gas-Light Journal,
No. 39 Nassau St.,
Corner of Liberty St.
New York City.

## GAS & WATER-METERS.

**JOSEPH LENNIG,**
**1615, 1617, and 1619 Francis St.,**
Above Ridge Avenue, Philadelphia, Pa.,
MANUFACTURER OF
**WET & DRY GAS METERS,**
STATION, SHOW, & EXPERIMENTAL METERS,
**Photometers, Pressure Registers, Indicators, and Gauges, Governors, Meter Provers, Centre Seals, Fluid Gauges, &c.**
GAS APPARATUS
Of the most reliable and approved construction manufactured and on hand at the
UNION GAS METER WORKS.

H. R. WORTHINGTON'S
**PATENT WATER-METER,**
This Meter combines
ACCURACY,
SIMPLICITY, and
REMARKABLE DURABILITY,
with such ease and certainty of motion, as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream. These qualities, with its low cost, have caused its extensive adoption by corporations and individuals, in many of our largest cities.
HENRY R. WORTHINGTON,
61 Beekman street, N. Y.

A. CARR, Manufacturer and Dealer in Wrought and Galvanized Iron Pipe, Brass Cocks, Valves, &c., and all descriptions of FITTINGS FOR STEAM, WATER and GAS,
135 MERCER STREET, New York.

## FINANCIAL.

JOHN MOSS, Jr.,
**BROKER,**
**83 WALL STREET, NEW YORK**
Particular attention given to the negotiation of GAS-LIGHT and WATER COMPANIES SHARES and BONDS.

**ALBERT H. NICOLAY,**
**STOCK BROKER AND**
**AUCTIONEER,**
**No. 52 William Street,**
Near Wall St., New York.
Special attention given to the Buying and Selling of Gas-Light Companies' Stocks.

**JOHN B. MURRAY,**
No. 39 NASSAU STREET,
Opposite the Post Office, New York,
OFFERS FOR SALE
GAS-LIGHT STOCKS
In all the leading Companies.

## GAS-FIXTURES.

***Mitchell, Vance & Co.,***
MANUFACTURERS OF
**CHANDELIERS,**
And every description of
**GAS FIXTURES,**
WAREHOUSE, No. 620 BROADWAY.
MANUFACTORY,
Nos. 335, 337, 339, 343 West 24th Street,
New York.

GEORGE H. KITCHEN & CO.,
Manufacturers of
**Fixtures for Gas-Light Purposes,**
Wood's Building, No. 561 Broadway, New York.
Office of the Inspector of Gas Meters for the State of New York.

# THE AMERICAN METER CO.,

*Organized under the General Manufacturing Laws of the State of New York.*

SAMUEL DOWN, President. HENRY CARTWRIGHT, Vice-President. RICHARD MERRIFIELD, Secretary and Treasurer.

Trustees.

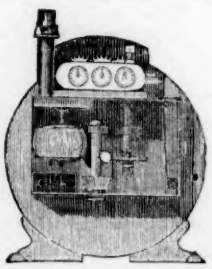
SAMUEL DOWN, WILLIAM HOPPER, R. H. GRATZ, HENRY CARTWRIGHT, RICHARD MERRIFIELD.
THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS and REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durability, accuracy, and excellence of workmanship. Orders addressed

**AMERICAN METER COMPANY,**

340 WEST TWENTY-SECOND STREET, NEW YORK,
1504 FILBERT STREET, PHILADELPHIA,
23 & 25 BROMFIELD STREET, BOSTON, will meet with prompt attention.



# HARRIS & CO.,

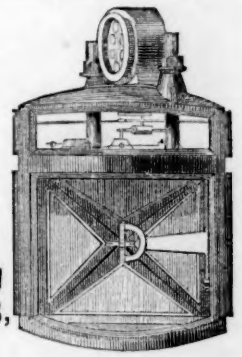
(LATE HARRIS & BRO.,)

**N. W. CORNER 13TH & CHERRY STREETS,**

PHILADELPHIA,

MANUFACTURERS OF

# WET AND DRY GAS-METERS,



**METER PROVERS, CENTRE SEALS, PHOTOMETERS, GOVERNORS, STATION METERS,**
**EXPERIMENTAL METERS, PRESSURE REGISTERS, PRESSURE GAUGES, &c., &c.**

The firm of Harris & Co., which comprises the senior partner and only practical Meter maker of the late firm of Harris & Bro., will continue the manufacture of Meters, &c., of every description, and will guarantee to furnish an article of Meters equal to the best in the country, at the lowest rates, and combining the latest improvements with great durability and accuracy. The reputation of the Meters of the late firm of Harris & Bro. is confidently appealed to. All our Meters are tested by a sworn Inspector. Terms Easy.

## HARRIS & BROTHER,

## PRACTICAL GAS METER MANUFACTURERS,

Continue, as heretofore, at their old Establishment,

**No. 1117 CHERRY ST., PHILADELPHIA,**

TO MANUFACTURE

WET AND DRY GAS METERS (Consumers'),
STATION, EXPERIMENTAL AND SHOW METERS,
GLAZED METERS, METER PROVERS, AND PHOTOMETERS,
GOVERNOR AND CENTRE SEAL DRUMS,
FLUID AND PRESSURE GUAGES,
PRESSURE REGISTERS AND INDICATORS, &c., &c., &c.

All our work warranted. All orders addressed to

HARRIS & BRO., 1117 Cherry Street, Philadelphia.

## PRINCE'S METALLIC PAINT,

AN INDESTRUCTIBLE COATING FOR

**IRON, TIN, and WOOD.**

It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. It prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though sold at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, rouge, and emery, being better and cheaper.

This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral paints. It is free from any waste, and possesses a spreading and covering power unequaled.

*Terms, by the Barrel or Half Barrel, Four Cents per Pound.*

A liberal discount made to parties purchasing by the ton.

A Barrel or Ton will be forwarded to any gas companies desirous of testing its qualities, for which there will be no charge if it does not give entire satisfaction as being the cheapest and most durable of all other Paints in the market.

Also, Prince's Imperial Black Paint, and Prince's Protoxide of Iron.

DANIEL SLOAN, General Agent,
115 Liberty Street, New York.

*Local Agents*—S. R. Williams, 204 South Front st., Philadelphia.
Calvin Gay, 29 Doane st., Boston.

## BOOKS FOR GAS ENGINEERS.

A Treatise on Gas-Works and the Practice of Manufacturing and Distributing Coal-Gas. By Samuel Hughes, Civil Engineer.

Gas Legislation, being a copious Index to the Metropolis Gas Act of 1860. By Samuel Hughes, C. E.

Report of the Proceedings of Both Houses of Parliament on the Metropolitan Gas Bill.

The Chemistry of Gas-Lighting. By Lewis Thompson, Consulting Chemist.

A few copies of the above books, invaluable to gas engineers, are for sale at the Rooms of the American Gas-Light Journal, No. 39 Nassau st., New York City.

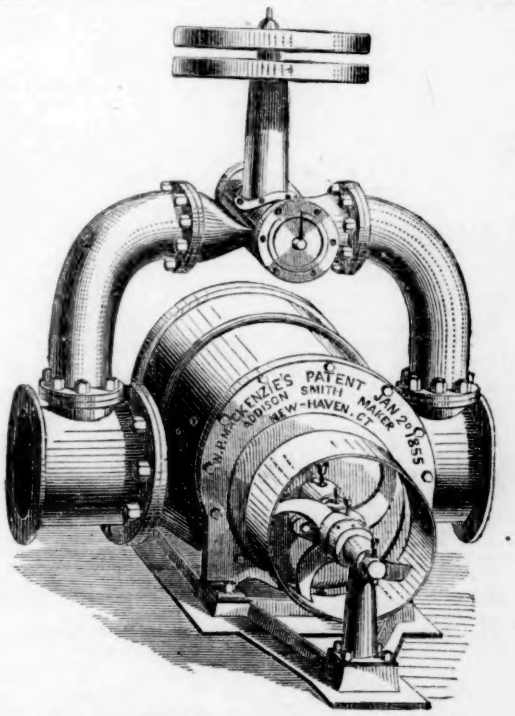
Gas Engineers who may want any scientific books will be promptly supplied at publisher's prices, by sending their orders, accompanied by the money, to this office.

NEW YORK FIRE-BRICK Manufactory. (Branch Works at Kreischerville, Staten Island.)

B. KREISCHER & CO., office 56 Goerck street, corner Delancy street, New York.

Gas-House Tiles and Fire-Brick of all shapes and sizes. Fire Mortar, Clay, and Sand articles of every description made to order at the shortest notice. B. Kreischer, M. Maurer, A. Weber.

THE AMERICAN
**PETROLEUM COMPANY,**
OF THE CITY OF NEW YORK,
**No. 10 Pine Street.**
W. W. CLARKE,
Vice President.




## SMITH & SAYRE,

Sole Proprietors and Manufacturers of

## THE MACKENZIE PATENT GAS EXHAUSTER

AND

**PATENT COMPENSATOR.**

They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the production and illuminating power of the gas, and add very much to the durability of the retorts, either clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, durable, cleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

We are also sole proprietors and manufacturers of the

MACKENZIE PATENT BLOWER, PATENT CUPOLA AND SMELTING FURNACE.

The Blower is a Force Blast machine, durably built, and can be driven with one-third the power required to drive the ordinary Fan. The Cupolas are manufactured in sizes to melt from 1 ton to 20 tons per hour, will save one quarter of the time required by the old style Cupola, and 33 per cent. uel Address

SMITH & SAYRE, 458 Broadway, New York.

NEWSPAPER WRAPPERS. Mara's Patent Self-Sealing and Folding Water-lined Newspaper Wrappers, $1.50 per 1000. Sold by

HAMILTON, JOHNSON & FARELLY,
22 Ann st., New York.

CLARK'S PATENT STEAM AND Fire Regulator Co., sole Patentees, and manufacturers of CLARK'S PATENT STEAM AND FIRE REGULATOR, No. 5 Park Place New York.

W. H. Perrine, Pres.

# VAN KIRK & CO.

Manufacturers of

CHANDELIERS, GAS FIXTURES, &c.,

**Bronze Figures & Ornaments, Porcelain & Mica Shades,**

## COAL OIL BURNERS,

**HAND LAMPS, COLUMNS, &c.,**

**No. 517 ARCH STREET, PHILADELPHIA.**

**Factory at Frankford, Philadelphia.**

ALL GOODS WARRANTED.

## DIETZ & CO.,

MANUFACTURERS, IMPORTERS AND DEALERS IN LAMPS,

**And all Goods appertaining to the Lamp Trade,**

**132 WILLIAM STREET, NEW YORK.**

## PATENT AGENCIES.

SCIENTIFIC AMERICAN OFFICE,
NEW YORK CITY—37 PARK ROW,
WASHINGTON, D. C.—F AND 7TH STS.

MESSRS. MUNN & CO., publishers of the SCIENTIFIC AMERICAN and Patent Solicitors for the last seventeen years, would announce to the public that they never possessed better facilities for obtaining Letters Patent and transacting all kinds of business before the Patent Office than they now have.

During the *seventeen years* they have been engaged in procuring patents they have acted as Attorneys for more than SEVENTEEN THOUSAND patentees. Nearly one-third of all the applications for patents annually made in this country are conducted through the "Scientific American Patent Agency," and nearly all the patents secured abroad by American citizens are taken through this Office.

In making an application for a patent, all the inventor is required to do is to furnish a model with an explanation of the operation and advantages claimed. The drawings, petition, specification and other papers are prepared and presented at the Patent Office by MUNN & Co., who have a large corps of engineers, draughtsmen, specification writers and copyists in constant employment. Papers prepared at short notice.

Pamphlets of instruction, announcing the amount of fees, size of model, and other information as to the best made of obtaining patents in this and all foreign countries, are furnished free on application. For further particulars address

MUNN & CO.,
PUBLISHERS OF THE "SCIENTIFIC AMERICAN,"
No. 37 Park Row, New York.

**ESTABLISHED 17 YEARS.**

OFFICE FOR THE PROCURATION of Letters Patent and the Registration of Designs. JOSEPH WILLCOCK & CO., Patent Agents and Engineers, successors to MESSRS. BARLOW & Co., 89 Chancery Lane, London, W. C.

Gratis and post free, "The Inventor's Manual," also a pamphlet, "L'Obtention de Patentes Anglaises," 500 Mechanical Movements; the first part of Kinematics, or the Transformation of Motion, by Joseph Willcock, C. E., Mem. Soc. of Eng. May be had at the above address, and of any bookseller. Price 2s. 6d.

The second part is approaching completion and will shortly be announced.

MESSRS. J. WRIGHT & CO., CONSULTING ENGINEERS and SOLICITORS of PATENTS, No. 42 Bridge street, Blackfriars, London, E. C. Patents for inventions obtained in all countries where Patent Laws are in force.

J. N. McINTIRE, PATENT ATTORNEY and SOLICITOR OF AMERICAN AND FOREIGN PATENTS,
Office, No. 37 PARK ROW,
New York City.

F. C. TREADWELL, JUNR., SOLICITOR OF PATENTS,
And expert in Patent Cases, 335 BROADWAY, (Moffat's Building,) New York.

AMERICAN AND FOREIGN PATENT AGENCY, Established 1838.
Letters Patent for New Inventions procured in the United States, Great Britain, France, and other countries. LEMUEL W. SERRELL,
119 & 121 NASSAU ST., New York.

## WOOD GAS.

THE INVENTOR AND PATENTEE of a New and Improved Retort for Manufacturing Gas from Wood, Turf, &c., would call the attention of Gas Companies, and the public generally, to an invention which will be a great saving to the community, as they can thereby supply an exceedingly cheap, clear, and brilliant light, besides useful products in profusion. The Works can be seen in successful operation at the Cremorne Gardens, Fourteenth street and Sixth avenue, on application at the office of the Patentee, No. 23 Liberty street, New York, and where any information may be obtained, and where Companies or private individuals wishing to purchase rights for Hotels, Factories, Private Houses, Cities, Counties, or States, will please apply.

## WOODEN PURIFYING TRAYS.

**PATENT**
**Conically Slotted Solid Wood Sieves**
**FOR GAS PURIFIERS.**

## CAUTION
TO
## GAS MANUFACTURERS.

The Conically Slotted Solid Wood Tray was patented 21st October, 1862, by N. O. Hawxhurst, assignee of Wm. Combe, and all persons are cautioned against purchasing such trays of R. G. Hunt, or any other person except the subscriber, as it is a direct infringment of said patent. The following companies are now using these trays.

**Manhattan, New York,**
**Williamsburgh,**
**Brooklyn,**
**Albany,**
**Baltimore,**
**Philadelphia,**
**Chicago.**
**Louisville,**
**And numerous others.**

Orders received by mail or otherwise.
JOHN L. CHEESMAN,
147 Ave. C, New York City.

## CLAY RETORTS.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE, ENGLAND,
Manufacturer of CLAY RETORTS, FIRE BRICKS, and every description of FIRE CLAY GOODS.

PHILADELPHIA FIRE-BRICK Works, corner of Vine and Twenty-third streets, Philadelphia.
JOHN NEWKUMET,
Manufacturer of all kinds of FIRE-BRICK, GAS-HOUSE TILES, to suit all the different plans in use. Clay Retorts and Dentists' Muffles. Orders filled at short notice.

## IRON FOUNDRIES.

MORRIS, TASKER & CO.,
**PASCAL IRON WORKS,**
[ESTABLISHED 1821,]
**PHILADELPHIA,**
Manufacture Wrought Iron Welded Tubes for Gas, Steam or Water; Lap-Welded Boiler Flues, GALVANIZED WROUGHT IRON TUBES,
ARTESIAN WELL PIPES,
of Wrought or Cast-Iron, screwed together, flush inside and out; Gas-works Castings, Retorts and Bench Castings for Coal Gas-works,; Cast-Iron Street Mains, Bends, Branches, Drips, &c.
**Gas and Steam Fitters' Tools, &c.**
STEPHEN MORRIS,
THOMAS S. TASKER,
CHAS. WHEELER,
STEPHEN M. P. TASKER.

BERGEN IRON WORKS,
Established 1833.
R. A. BRICK, Manufacturer of CAST IRON WATER and GAS-PIPES. RETORTS, PIPES, &c., always on hand. Office, 109 Leonard Street, New York.

S. FULTON & CO., (Successors to Colwell & Co.) Manufacturers of Pig Iron and Cast Iron Gas and Water Pipes, also Heavy and Light Castings of every description, No. 207 North Water street and 206 North Wharves, Philadelphia.
SAMUEL FULTON, THEO. TREWENDT.

FLORENCE IRON WORKS.—The subscriber is prepared to execute orders and make contracts for Cast-Iron Water and Gas-Pipes, from 2 inches to 48 inches in diameter; also, Retorts, Bench-Castings, Branches, Bends, and all Castings for Water or Gas-Works. Pipes and Castings coated with Smith's Patent Coal Tar Varnish to prevent corrosion.
JOSEPH G. JONES,
205½ Walnut Street, Philadelphia.

**THE ALPHA TUBE WORKS,**
WALSALL, STAFFORDSHIRE, ENGLAND,
Established 1830.

LAMBERT BROTHERS,
Manufacturers of
LAP-WELDED BOILER TUBES, LOCOMOTIVE AND MARINE ENGINE FITTINGS,
**Wrought Iron Welded Pipe,**
FOR STEAM OR HIGH-PRESSURE WATER AND GAS; HIGH-PRESSURE STEAM AND WATER VALVES,
FIRE & GARDEN ENGINE WORK, PUMPS, HYDRANTS, WATER-CLOSETS,
**Iron and Brass Gas-Fittings, Gaseliers, &c.**
AND OF THE GROVE BEDSTEAD WORKS, WALSALL.
*Delivery Free, in Liverpool, &c.*
*Catalogues post free.*

POOLE & HUNT, BALTIMORE, MD., are prepared to execute orders for
GAS-HOLDERS,
**IRON-ROOF FRAMING,**
And all other descriptions of
**Iron Work for Gas-Works, Water-Pipes, and Heavy Castings, and Machinery generally.**

R. D. WOOD & CO.,
MANUFACTURERS OF
CAST-IRON PIPE, RETORTS, &c.
Office, 400 Chestnut Street,
PHILADELPHIA.

J. VAUGHAN MERRICK, W. H. MERRICK,
JOHN E. CORE.
**SOUTHWARK FOUNDRY,**
FIFTH & WASHINGTON STREETS,
**PHILADELPHIA.**
**MERRICK & SONS, Engineers,**
MANUFACTURERS OF EVERY DESCRIPTION OF GAS MACHINERY.
Retorts, Bench Castings, Condensers, Washers, Scrubbers, Wet or Dry Lime Purifiers, Coke Wagons, Fire Tools, Wrought Iron Grate Bars, Gasholders, either Telescopic or Single, with Suspension Frames complete; Wrought Iron Roof Frames, for Iron or Slate; Stop Cocks, Exhausters, Steam Pumps, Boilers and Tanks, Steam or Hand Air Pumps for providing Street Mains, Centre Seals, Governors, Wrought or Cast-Iron Line Sieves for Purifiers, Purifier Hoisting Machines, &c., &c.
Address— MERRICK & SONS,
5th and Washington Streets, Philadelphia.

THE GROVER & BAKER SEWING MACHINE, everywhere triumphant. This Machine has taken the First Premium at the State Fairs last held in

| | |
|---|---|
| New York, | Missouri, |
| New Jersey, | Kentucky, |
| Ohio, | Tennessee, |
| Indiana, | Virginia, |
| Illinois, | North Carolina, |
| Michigan, | Alabama, |
| Iowa, | California, |

*Including every State Fair at which it has been exhibited in* 1862.

The Work made on the Grover & Baker Machine has taken the First Premium at every Fair in the United States where it has been exhibited to this date. GROVER & BAKER S. M. CO.,
495 Broadway, N. Y.


## OUR AGENTS.

**AGENTS OF**
**The American Gas-Light Journal,**

From whom it can be purchased in single copies or by the year.

TERMS—$3 per annum. Single copies 15 cents. Liberal discount to Dealers.

| | |
|---|---|
| ALBANY, N. Y. | Thomas Hastings, P. L. Gilbert, Wm. J. Bell. |
| BOSTON, Mass. | D. Howard, Jr., Cushing & Bowen. |
| BRIDGEPORT, Ct. | News Agent at R. R. Station. |
| BUFFALO, N. Y. | T. G. Hawks, B. F. Felton, D. Lockwood. |
| CARMANSVILLE, N. Y. | W. Cameron. |
| CATTSKILL, N. Y. | W. Van Loan. |
| CHICAGO, Ill. | J. McNally, J. R. Walsh, Shear & Co. |
| CLEVELAND, O. | Hawks & Bros. |
| COLDSPRING, N. Y. | A. Tenant. |
| DOBBS' FERRY, N. Y. | E. Ackerman. |
| ELIZABETH, N. J. | R. Caldwell, Wm. Gale. |
| ELMIRA, N. Y. | M. B. Brink. |
| FALL RIVER, Mass. | L. J. Moroo. |
| FISHKILL LANDING, N. Y. | J. R. Van Slyke. |
| FISHKILL VILLAGE, N. Y. | B. Stanbach. |
| FORT WASHINGTON, N. Y. | J. Maloney. |
| FRANKLIN, N. Y. | G. W. Reynolds. |
| GALENA, Ill. | G. H. Schenck. |
| HARTFORD, Ct. | D. C. Pond, C. J. Geer. |
| HASTINGS, N. Y. | D. Crane. |
| HONESDALE, Pa. | A. G. Forbes. |
| HUDSON, N. Y. | G. Parton. |
| HYDE PARK, N. Y. | J. N. De Graff. |
| JAMESTOWN, N. Y. | G. W. Hazletine. |
| KINGSTON, N. Y. | C. Van Buren. |
| MILBURN, N. J. | W. Hastings. |
| MORRISTOWN, N. J. | J. West, J. R. Runyon. |
| NEWARK, N. J. | Agens & Co., J. R. Jillison. |
| NEWBURG, N. Y. | W. H. Callahan, J. M. Martin, P. C. Daly, G. P. Lomas. |
| NEW HAVEN, Ct. | E. Downs, T. H. Pease. |
| NEWPORT, R. I. | B. J. Tilley. |
| NEWTOWN, N. J. | H. Warren. |
| NYACK, N. Y. | H. Hazelbarth. |
| PEEKSKILL, N. Y. | J. A. Green. |
| PHILADELPHIA, Pa. | V. H. Myers, 152 South Fourth street. |
| PITTSBURG, Pa. | J. W. Fittock, Henry Miner, L. P. Hunt. |
| POUGHKEEPSIE, N. Y. | J. H. Bush, W. Patrick, G. Williamson. |
| PROVIDENCE, R. I. | D. Kimball, |
| RAHWAY, N. J. | W. H. Neefers. |
| RONDOUT, N. Y. | A. M. Barbes, Winter Bros. |
| SARATOGA SPRINGS, N. Y. | A. Hill. |
| SAUGERTIES, N. Y. | T. J. Barrett. |
| SING SING, N. Y. | F. Bushers. |
| SOMMERVILLE, N. J. | C. Barkalow. |
| STAMFORD, Ct. | G. R. Treate. News Agent at R. R. Station. |
| ST. JOHNSVILLE, N. Y. | G. A. Russell. |
| SYRACUSE, N. Y. | J. H. Green. |
| TARRYTOWN, N. Y. | C. De Riviere. |
| TOLEDO, O | L. C. Shear. |
| TROY, N. Y. | L. Willard, J. F. Hoyt. |
| WASHINGTON, D. C. | Frank Taylor, P. De Vine, Kirkwood House, News Agent Willard's Hotel. |
| WATERBURY, Ct. | D. J. Bishop. |
| WELLSVILLE, N. Y. | Wm. Patton. |
| WEST POINT, N. Y. | H. N. Sheerar, R. A. Grand, opposite West Point. |
| YONKERS, N. Y. | D. Burns, John Featherstone. |

**General Agents in New York City.**

ROSS & TOUSEY, 121 Nassau Street.

H. DEXTER & Co., 113 Nassau Street.

OKIE, DAYTON & JONES, cor. Ann and Nassau Sts.

L. N. SHEAR & Co., 55 Hudson Street.

HAMILTON, JOHNSON & FARRELLY, 22 Ann Street.

J. F. FREES & Co., 24 Ann Street.

F. S. THOMSON, New Haven Railroad Station, 27th Street.

THOMAS FITZGIBBONS, New Jersey and Amboy Railroads.

ALEXANDER CRAW, Harlem Railroad Station, 26th Street.

WM. SKELLY, Greenwich Street, Erie Railroad Station, Duane Street.

**In Canada.**

THE AMERICAN GAS-LIGHT JOURNAL can be ordered through any of the News Agents in either of the Canadas.

**In Great Britain.**

Terms 12s. per annum, single copies 10d.
TRUBNER & Co., 60 Paternoster Row, London.

**In France.**

Terms 15 Frs. per annum.
Bureau of *Le Journal de l'Eclairage au Gaz*, Boulevard de Poissonniere, No. 24, Paris.

ROOMS IN NEW YORK.—No. 39 Nassau Street, opposite the Post Office.
Terms—$5 per annum. Single copies 15 cents.